

SHEEP BREEDING IN AUSTRALIA,
CONTAINING AN HISTORICAL SKETCH
OF THE MERINO SHEEP
*THE PEDIGREES OF THE PRINCIPAL
STUD FLOCKS IN AUSTRALIA; A
TREATISE ON BREEDING, WITH SOME
REMARKS ON THE MANAGEMENT OF
THE SHEEPWALK AND THE DISEASES
OF SHEEP*
GEORGE A. BROWN





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I DEDICATE THIS BOOK
TO THE
OLD SQUATTERS OF AUSTRALIA,
TO THE MEN WHO,
IN THE FACE OF GREAT DANGER AND DIFFICULTY,
DEMONSTRATED THAT THE
AUSTRALIAN PASTURES WOULD PRODUCE THE BRIGHTEST,
THE SOFTEST, AND THE MOST BEAUTIFUL MERINO
WOOL IN THE WORLD.

PREFACE TO SECOND EDITION.

A SECOND edition of this work has been rendered necessary owing to the many changes in the ownership of the stud flocks that have taken place during the last ten years. I have included many studs that were overlooked in the first issue, and inaccuracies have been rectified. The divisions of the work relating to breeding, management, and the diseases of sheep will, I trust, be of some use to those whose experience in live stock husbandry is limited. It was my wish to furnish this edition with portraits of all the most famous sheep in Australia, but unfortunately I have been unable to accomplish my object. The portraits given are by a new process, and have been furnished by Messrs. Foster and Martin.

G. A. B.

MELBOURNE,

6th January, 1890.

PREFACE TO FIRST EDITION.

MY object in compiling this work has been to produce what will serve as a stud book of pure-bred sheep in the Australian colonies, to show the different lines of breeding in the principal stud flocks, and to assist those who may wish to obtain sheep having a preponderance of a certain strain of blood. I regret that my time being so much occupied has hindered me from producing the work as originally designed, but I trust that in its present form it will be found useful and interesting to the sheep-breeders of Australia. I wish to acknowledge the kindness of Mr. William Cumming, of Mount Fyans, and Mr. Alexander Buchanan, of Titanga, in assisting me to bring out the work.

YORICK CLUB,

1st August, 1880.

INTRODUCTION.

IN this introduction I have endeavoured to lay before the reader, in a condensed form, all the information I have been able to gather respecting the origin and early history of our domestic sheep. My occupation as a journalist has not afforded me sufficient leisure to make the inquiry as exhaustive as I could wish, and I am conscious of a want of skill in the arrangement of the matter; I trust, however, that the information contained in the following pages will be of some interest to the sheep farmers of Australia. I will be well satisfied if I succeed in awakening in the minds of my readers somewhat of that enthusiasm which has made this portion of my work a labour of love. To those who follow up the inquiry into the origin of our domestic sheep the work will prove most interesting. The fitful glimpses of the everyday life of long-forgotten races, and the evidences of long-extinct civilizations which the student will obtain, as the story of the ovine race becomes more plainly revealed, will prove an ample reward for the labour the inquiry will entail. A complete history of the sheep, from the period of its earliest domestication to the present day, would be, in a great measure, a record of the human race from the time when man emerged from the purely savage state. Such a record I have no pretensions to write, nor do I think the materials exist

to construct such a work. In sketching the early history of the domestic sheep, I find it is so intimately connected with the progress of human life that I hope the reader will pardon me if I occasionally diverge from the line of my inquiry, and refer to matters which are, strictly speaking, not closely connected with the subject, but which, I hope, will not, on that account, be less acceptable.

Except the dog, there is no animal, wild or domestic, that has a wider range over the surface of the earth than the sheep, and certainly not one of the domestic animals renders such important and valuable services to man, or is so intimately connected with his domestic welfare. Differences of climate, food, and mode of treatment have given rise to an infinite variety of types, many of which are so widely dissimilar in form, temperament, and qualities that it is often difficult to believe they belong to the same race.

In size they display a remarkable disparity, and on this subject one writer* remarks—"If a Breton sheep were placed by the side of a fair example of the Leicester breed, the difference in size would be much greater than that which is exhibited between the huge Flanders dray horse and the Shetland pony." The wild races of sheep, strange to say, exhibit almost as great a dissimilarity of size. The Chinese sheep, and the fat-tailed sheep of Africa and India, are totally unlike the sheep of Europe, while it is hardly possible to conceive a greater difference existing among animals of the same race as that between the hairy sheep of the East and the long-wool sheep of Britain.

* "Natural History," by the Rev. J. G. Wood.

One of the most strange breeds of sheep in the world is that used in Eastern Turkestan as a beast of burden. They often carry loads weighing as much as 32 lbs. over long distances and under circumstances of great hardship. Captain Biddulph makes the following remarks on these sheep* :—"That a flock of sheep carrying 20-lb. loads should be able to march 330 miles in a month, with only one casualty, through country in which forage is always scanty, and at a very inclement season of the year, is remarkable." During this journey Captain Biddulph mentions that on five days they had no food at all, and on several other days the grass was very scanty. They had to cross streams and rivers often three and four times a day, and their progress was impeded by their fleeces being saturated with water, which often froze; notwithstanding these hardships, only one sheep broke down.

The great dissimilarity that exists among the various breeds of sheep has led many to conclude that they are not all derived from the same originals, but that they are the descendants of several wild ancestors which have been domesticated in different parts of the world. This idea will, I think, be accepted by anyone who closely studies the great families into which the domestic sheep are divided and the difference in size, disposition, habit, character of wool, and constitution they still exhibit, after so many thousand years of domestication. This difference has not been caused by the action of man; skilful as are our stock breeders, it

* This statement is given in "The Roof of the World" by Lieutenant-Colonel T. E. Gordon. Mention is made of these sheep in "Moorecroft's Travels."

would be hopeless for them to attempt to turn a mountain sheep into a longwool, or one of the fat-tailed sheep of Africa into a merino. There is a line beyond which man cannot wrench Nature to his purpose, and that has been very plainly shown of late in the attempt to "improve" the Romney Marsh sheep. The infusion of outside blood into the Marsh flocks has resulted in rendering the produce unable to live in the Romney Marsh.

The origin of our domestic sheep will, in all probability, remain for ever unknown. On this subject Mr. C. Darwin admits that he can form no opinion, and Professor Owen remarks* :—"History as yet possesses no facts or principle adequate to the satisfactory solution of the question whether the domestic sheep (*Ovis Aries Lin*) was created as such, in special relation to the exigencies of man, or whether it was the result of man's interference with the habits and wild mode of life of the Argali (*Ovis Ammon Lin*)."

Of the ancestry of our other domestic animals we have some little knowledge. Professor Huxley has given a clear and most interesting account of the ancestors of the domestic horse in his American Lectures. Our domestic cattle are said to be derived from two distinct European species, *Bos Primigenius*, which still existed in a wild state in Cæsar's time (and of which the Chillingham Park cattle and the vast herds of white cattle in Eastern Europe are the descendants), and *Bos Longifrons* (of which the Devons are said to be the most direct descendants).

* "Lectures on the Exhibition of 1851."

Our domestic swine are the result of a union of the wild boar (*Sus Scrofa*) with the *Sus Indica*, which no longer exists in a wild state.* The endlessly diversified breeds of the common goat are believed to be all derived from the Caucasian *C. Hyagrus*.† Of the domestic sheep, most naturalists have been content—without, it seems to me, making much inquiry—to ascribe its origin to the Moufflon, or the Argali, though there are many other wild species of sheep, almost any one of which might, with equal justice, be selected as the parent of the domestic sheep. On one point most naturalists and paleontologists appear to be agreed—namely that the sheep is of comparatively recent appearance on the earth. On this subject Professor Owen says:—"No unequivocal fossil remains of the sheep have yet been found in the bone caves, the drift, or more tranquil stratified newer pliocene deposits so associated with the fossil bones of oxen, wild boar, wolves, foxes, &c., as to indicate the coevality of the sheep with those species, or in such an altered state as to indicate them to have been of equal antiquity;" and in another passage he remarks—"No fossil horn core of the sheep has yet been anywhere discovered: and, so far as this negative evidence goes, we may infer that the sheep is not geologically more ancient than man; that it is not a native of Europe, but has been introduced by the tribes who carried hither the germs of civilization in their migrations westward from Asia."

A fact somewhat at variance with these statements is

* "Races of Men," by Oscar Peschel.

† Zoological Society of London, July, 1840.

‡ "Lectures on the Exhibition of 1851."

mentioned by M. Pictet,* who notices the fossil bones of a distinct variety of sheep which was found in the bone caves of St. Julien d'Ecosse, and other remains of sheep found in the bone caves of Southern France. Professor St. George Mivart, in an article contributed to the *Contemporary Review*, January, 1880, places the sheep and the ox among the animals inhabiting Europe during the pliocene period, before the glacial epoch. The remains of sheep have been found in England along with those of many extinct animals, showing that they existed in that country at a very early date. Curiously enough, there are some remarks on this subject contained in a letter written by Mr. J. Liddy, which appears in the introduction to "Indigenous Races of the Earth." The writer says:—"Some time since, Professor Holmes, of Charleston, submitted for my examination a collection of fossil bones from post pliocene deposit of Astley River, S.C. Among the remains of extinct horses, &c., were some which I consider as belonging to the dog, the domestic ox, the sheep, and the hog."

In referring to the generally expressed opinion by naturalists that our domestic sheep are derived from the Moufflon or the Argali, M. Cuvier makes the following pertinent remarks:—"One remarkable fact, however, at variance with this supposition, and which we have never yet found to be noticed, is that all the wild races have exceedingly short tails, whereas the domestic breeds have generally, if not always, when un mutilated, tails that nearly reach to the ground. It is easier to conceive the loss of this appendage in certain domestic breeds than its acquirement or extension." M. Pictet alludes to the

* "Traité de Paleontologie."

supposition that the Argali is the parent of our domestic sheep, and points out a difference existing in the form and construction of the horn of the Argali and that of the domestic sheep. As a rule, naturalists have treated this subject indifferently, and have merely alluded to the origin of the domestic sheep in an incidental manner. I feel convinced that, as our knowledge of the subject becomes greater, it will yet be proved that wild sheep once existed in Europe, if not in Britain.

The species of wild sheep at present existing in various parts of the world are much more numerous than is generally imagined. In a paper read before the Zoological Society, July, 1840, Mr. E. Blythe enumerates no less than fourteen wild species, and he thinks it is probable that we are still very far from having ascertained the complete existing number, but that several more yet remain to be discovered upon the elevated table lands and snowy mountains of middle Asia, from Caucasus and Taurus to the Altai. It may be there are among them some varieties much more nearly allied to the domestic races than any at present known.

The greater number of the following species of wild sheep are enumerated by Mr. Blythe:—

Ovis Poli (the Pamir sheep). Named after Marco Polo, who speaks of it as inhabiting the plain of Pamir, 16,000 feet above the sea. The horn is more like that of the domestic ram than is that of any other wild sheep. Mr. John Scully says of the *O. Poli**:—"Judging from the number of heads sent into Gilgit, this animal must inhabit Hunza in considerable numbers." Of this sheep

* "Mammals of Gilgit."

Captain Biddulph has the following * :—"While we were at Kashgar numerous specimens of gigantic wild sheep were brought in from the Thien Shan range by Colonel Gordon's party. This was taken by us to be *O. Poli*. It was remembered by us at the time that the Pamir horns ran larger than the Thien Shan ones, the latter measuring 48 inches from base to tip, whereas on the Pamir any number of horns measuring from 50 to 60 inches could be picked up (one measured 65 inches)." Sir V. Brook gives the height of the Thien Shan sheep at 46 inches, and the length from nose to tail at 79 inches. The Rev. H. Landell says Dr. Severtzoff shot one (*O. Poli*) the head and horns of which weighed 70 lbs.

O. Nivicola (Eschscholtz). Inhabits the mountains of Kamtschatka. This sheep Mr. Blythe proposes to call *O. Hodgsonii*. It is described as having long woolly hair, not lengthened into a mane at the neck. Tail very short, skull remarkably short and broad, colour grisly brown. Remarkably agile.

O. Nahoor (Hodgson). The Nahoor sheep and Sua (not Sha) of Thibet. About the size of the larger breeds of tame sheep. Horns massive and rather short. M. Vigne says it is plentiful in Great but not in Little Thibet.

O. Burrhel. This handsome sheep bears about the same relation to *O. Nahoor* that Southdowns do to Leicesters. Smaller and more robust than *O. Nahoor*, with shorter ears and very dark horns. General colour dark chestnut brown, with tail apparently minute. A pair of these sheep presented by Brigadier-General Hearsey and Lieutenant Bartlett to the Zoological Society, bred twice, the female having two lambs on each occasion.

*Proceedings of the Zoological Society, 1875.

O. Cyndricornis. The Caucasian Argali. Mr. Blythe says of one specimen:—"Horns 3 feet long each, and 15 inches at the base. So heavy, I could not lift both together from the ground." Very little is known of this sheep.

O. Gemilini. The Armenian sheep. Belongs to the Moufflon group, but is yet different from the Moufflon of Corsica. Tail 4 inches long. Horns 20 inches round the curve, 10 inches round the base. According to M. Gemlin, this species is found only on the highest mountains of Persia. The female produces two or three lambs at a birth. Sir John M'Neil says:—"The horns resemble those of the domestic ram, being spiral, and complete more than one spiral circle." Mr. C. G. Danford says*:—"Gemlin's sheep is a very graceful animal, deer-like in its appearance, having long, fine limbs. Total length, 53 inches; height at shoulder, 33 inches.

O. Vignei. The Sha (not Sua) of Little Thibet and Koch of the Sulimani range between India and Choras-san. Closely allied to the Corsican Moufflon, but larger, being the size of a large fallow deer. Long limbed, and resembling a deer more than a sheep. Horns $32\frac{1}{2}$ inches round the curve, and 11 inches round the base. Mr. J. Scully says:—"This sheep is found in great numbers in the Gilgit district and the Astor Valley. Frequents bare hills, often as low as 4,500 feet above the sea. Large herds frequently seen, but very difficult to stalk."

O. Musimon (Linnæus). The Moufflon sheep of Corsica and Sardinia. The character of the horn is that of the domestic ram, but it is never prolonged to more than two-thirds of a circle. Mr. Blythe says:—"I doubt whether it has contributed at all to the origin of any tame race."

* "Mammals of Asia Minor."

They breed readily with domestic sheep, and their offspring are fertile.

The *Cyprian Moufflon* is probably an intermediate species between *O. Musimon* and *O. Gemilini*.

O. Ammon (Pallus). The Siberian Argali.

The "Old Shekarri" says of this species* :—The finest specimen of the latter animal (*O. Ammon*), which was as large as a bullock of the plains, Fred killed after a three hours' stalk. His horns were 16 inches in circumference at the base, and 48 inches round the curve."

O. Tragelaphus (Pallus). The bearded African goat sheep. Has a longer tail than either the Moufflon or the Argali. Inhabits the rocky parts of Mauritania and Barbary.

O. Ixalus Probaton (Ogilby). Only one specimen known. It resembles the American sheep, but is specifically distinct from any other.

O. Karelini. This sheep was for a time considered identical with the *O. Argali* (Pallus), but of late they have been accepted as a distinct species. Dr. Severtzoff† met this sheep in the high mountains of North-Eastern Turkestan. The Rev. H. Landell says it is next in size to the *O. Poli*. He mentions a head the horns of which were 56 inches round the curve and 18 inches in circumference at the base.

O. Heinisi. Inhabits the same region as *O. Karelini*, but more to the south. Sir V. Brook says the horns are nearly as large as those of *O. Poli*. Not much is known of this sheep.

O. Nigrimontana. Inhabits the Western Thian Shan

* "Adventures in Forest and Field."

† "Mammals of Turkestan."

Mountains and the Karatan. Frequents the larch woods and apple and ash grove district, about 6,000 feet above the sea.

O. Montana. The Rocky Mountain sheep of America.

O. Californiana (Douglas). Horns smoother than the Rocky Mountain sheep, and form a much more open spiral.

O. Cydleros (Hutton). Mr. W. T. Blandford says of this species* :—"This sheep is found in the warmest regions inhabited by any wild sheep. We heard of its occurrence and saw its tracks close to the sea level, at some low hills three marches west of Gwador, in Beluchistan, a country with an excessive summer temperature; and it is found on hills of no great height in Scinde, where the climate is still hotter. It measures 4 feet from horns to rump, along the curves of the head and back; 2 feet 8 inches high at the shoulder; horns rather more loosely wound—that is, the diameter of the curve described by them is less than in the Punjaub heads. The horns resemble those of *O. Vignei* from Ladak."

The following notice of a species of wild sheep, existing in a locality where one would least expect to find them, I take from *The Field*, 7th November, 1885 :—"Lieutenant Greely, of the American Polar expedition, delivered lately an address to an Agricultural Society at Pittsburg, Massachusetts, in which he mentioned that, during his Arctic exploration, he had passed through a district in which there were numerous wild sheep having

* "An Account of the Journeys of the Persian Boundary Commission."

large heads, great horns like oxen, and tails resembling those of horses. Their fleece was of the finest and thickest wool, almost surpassing that of the merino."

This is the only wild sheep that I have heard of as bearing a fleece of true wool. Though no mention is made of the colour of the fleece, the inference from Lieutenant Greely's remarks is that they are white-woolled sheep, which would distinguish them from all other wild types. They also differ from all other sheep, wild or domestic, in the character and length of the tail.

O. Aries (Linnæus). The domestic sheep. Of the domestic sheep, Mr. Blythe says:—"Assuming that different species have commingled to produce this animal, as appears to be very evident in the case of the dog, it is still remarkable that we have not yet discovered the principal wild type, or, indeed, any species with so long a tail as in many domestic breeds, which no doubt existed in their aboriginal progenitors. Nothing analogous has been found in the numerous and diversified breeds of goats."

Ovis Aries, var. *Steatopyga*. The following description of this variety is given by Dr. Petit*:—"The sheep of Abyssinia are remarkable for the length of their wool, for they are not covered with hair as are the sheep of Nubia and Upper Egypt. Their colour varies. Some are all black. Some are spotted, and others are of a uniform red. In some cases the wool is not longer than that produced by the sheep of France, while in others it is 8 inches long." Dr. Severtzoff has the following on this variety:—"It has long pendant ears and fat tail.

* "Voyage en Abyssinie."

It has high legs and short tail, both of which separate this sheep from our tame ones, and bring it nearer to the *O. Argali*, one of the short, irregular-horned species. The fat tails depend principally on the salt plants on which the animals feed." He says it is kept throughout Turkestan up to a height of 7,000 to 8,000 feet above the sea.

A race of wild sheep is said to have once existed in the island of St. Kilda which was larger than the largest goat, possessed a tail reaching to the ground, and horns longer and bulkier than those of an ox. Mr. Blythe mentions that such an animal is figured on a bas-relief taken out of the wall of Antoninus, near Glasgow.

In Holinshed's "Chronicles," the following mention is made of a race of wild sheep in the Scottish islands:—"The seven holie islands which are desert and breed nothing but a kind of wild sheepe, which is often hunted, but seldom or never eaten. For instead of flesh they have nothing but tallow, and if any flesh be it is so unsavorie that few care to eat it, except great hunger compel them. . . . Their haire is between the wooll of a sheepe and the haire of a goat, resembling both, shacked, and yet absolutelie like unto neither of both."

Nearly all the wild sheep are described as being of a rufous brown colour, tending to a lighter colour on the limbs and under part of the body. They all have the bleat of the sheep, and butt like a sheep, not like a goat. No naturalist or traveller has yet discovered a race of wild sheep of a black or dark brown colour, and yet there is ample evidence that one of the originals from which our domestic sheep are descended must have been

of that colour. Many writers believe that the originals of our Down breed of sheep were dark-coloured. It is a curious fact that, though our merino sheep have been bred for many centuries, so as to eliminate the dark blood, a certain number of black lambs are sure to appear even in the most carefully bred flocks. These black lambs, if mated together, will breed black sheep, in proof of which we have at least a couple of black merino flocks in Australia. Where has this black blood come from? For countless generations no black sire has been used in the merino flocks, and yet the blood is there, and ever and anon becomes evident in a black lamb. The persistency of this type, notwithstanding the efforts that have been made to eliminate it, and the fact that the black sheep will breed true to colour, lead me to the conclusion that one of the original types of our domestic sheep must have been black.

M. Cuvier is of opinion that the high central basin Cantal Conti or Cashmere; the secondary valley of Ancient Taurus and Caucasus, the Chorassan and Caramania, and the environs of Angora or central basin of Asia Minor, about the sources of the Halys and Sakaria, might be considered as the favoured nurseries whence the fleece-bearing animals have gradually spread over the rest of the world.

It has been assumed by several writers on the origin of our domestic animals that because all the known varieties of sheep will breed freely together and their offspring are fertile, they are therefore descended from the same wild original. The same may be said of our pigs, which are known to be derived from two wild types; of our neat cattle, which are believed to be

descended from two wild species, and of our dogs, which are believed to be descended from several wild types. The argument loses force when it is closely examined. It is well known that some animals of different species will breed and that their offspring are at times fertile.

On this subject M. de Quatrefages says* :—" By crossing and recrossing in a fixed manner the goat and the sheep, hybrids called *chabins* are obtained, which possess three-eighths of the paternal and five-eighths of the maternal blood. These animals produce a fleece much valued in South America, and are the source of real industry. They can be crossed for several generations, but at length all the crossings to which they owe their existence must be recommenced, they having returned to the parental types." By crossing the rabbit and the hare, hybrids called *Leporides* are produced, which are sometimes fertile. An instance of fertility in hybrids was lately given in *The Field* as having occurred at the Zoological Gardens, London. The portrait of a hybrid was given, which was bred in the following manner :—A Zebu (*Bos Indicus*) was mated with a Gayal (*Bibos Frontalis*), the produce, a female hybrid, was mated with an American Bison, and the produce, a female, was also mated with an American Bison, and proved fertile. In this experiment we find animals of different species, and from widely different parts of the earth, breeding freely together and their female offspring proving fertile.

Hybrids between animals of different species are more frequent than is generally supposed. The tiger has bred with the lion, the leopard with the jaguar and with the black panther of Java. Hybrids between the dog and

*"The Human Species."

the jackal, or between the dog and the wolf, remain fertile for many generations. Hybrids are at times produced in a free state, those between the polecat and ferret being frequently met with.*

I have hopes that some light will yet be thrown on the subject of the origin of our domestic sheep, and I feel sanguine that one or more of the wild types from which they have been derived will yet be discovered. It is curious that, while so many species of wild sheep have been discovered, only one wild species of goat is known to exist, and that is confined to a comparatively circumscribed area.

The remarks made by Sir John McNeil would point to Central Persia as being a likely spot in which one of the wild types from which our domestic sheep are descended may eventually be discovered. Mr. Spooner† remarks that "a race of sheep exists in Persia, and to the north of it, which deserves to be mentioned as being perhaps the nearest in character to the wild species. There are, indeed, various races in Persia, but this particular race is proper to the northern parts of the country and the Caspian, and is greatly diffused. It is covered with a very coarse, hairy wool, of a grey colour. Its horns are bent upwards, in the manner of the Argali, and, what is worthy of note, its head resembles the common figure of the ram as depicted in Eastern sculpture."

Though there is but little of interest, as connected with the subject of this inquiry, in the records of the geologist, and though naturalists have done so little to

* "The Natural Conditions of Existence as they affect Animal Life," by Karl Semper.

† "History, Structure, Economy, and Diseases of Sheep."

enlighten us, it is different when we turn to that newer and more fascinating branch of study in which the labours of the archæologist have of late years been so brilliantly rewarded. It is only within the last thirty years that systematic attempts have been made to throw some light on the story of human life during that vast extent of time antecedent to the comparatively insignificant period which is recorded in written history. At present the work may be said to be only in its commencement, but there is already collected a vast mass of evidences relating to the social life of long-forgotten races which have been dredged from the bottom of lakes, dug out of peat bogs, and exhumed from tombs, cromlechs, and barrows. The tale told by these remains is often more truthful and even more minute than historical records generally are. Thanks to the energy of modern inquiry into pre-historic archæology, what has long been called "the speechless past" is now becoming eloquent with the story of our race—from the time the savage hunters first wandered over the earth to the period of written history. This ancient record is now being put together by earnest, thoughtful men by the aid of the materials brought to light by the spade of the navvy. The brilliant discoveries made in the East have given additional zest to those engaged in this most interesting inquiry.

The period when the men of the paleolithic age dwelt in Europe is separated from our own days by such a vast space of time that archæologists have not ventured to estimate it by years, and the impossibility of constructing a chronology for the stone age has been universally admitted. It has been questioned if the paleolithic

hunters (as far as our knowledge goes, the first race of men who appeared in Europe) possessed any domestic animals, but the evidences are in favour of the supposition that they had already domesticated the dog. This supposition has received the support of Professor Stenstrup. A few writers are of opinion that the sheep was the first animal tamed by man ; but so far as my researches have extended I have found no facts to support this opinion. From what we know of the habits of savages, who live on the products of the chase and wander from place to place in search of game, it is extremely unlikely they would tame an animal that would be such an encumbrance to them as the sheep. However this may be, there is not the slightest doubt that their successors, the men of the neolithic (or polished stone) age, were possessed of domestic sheep, and in some instances we find indications that they had more than one breed. The proofs that this race had succeeded in taming the sheep have been obtained in nearly every country of Europe, from the terra-marra beds of Italy, the lacustrine dwellings of Switzerland, the barrows of France, Britain, Denmark, and Germany, and in the crannoges of England, Ireland, and Scotland. These remains are much more thickly spread over Europe than is generally supposed, but, unfortunately, many of the finest examples have been explored by careless and unskilful hands.

Mr. John Fisk describes the men of the neolithic period as the tamers and owners of the dog, ox, horse, pig, sheep, and goat. Of this race he says* :—"So many skeletons have been obtained of the men and women of

* "Excursion of an Evolutionist."

the paleolithic period, that we can say with some confidence that the whole of Europe was inhabited by one homogeneous population, uniform in physical appearance. The stature was small, averaging 5 feet 4 inches for the men and 4 feet 11 inches for the women, and the figure was slight; the skulls were dolichocephalic, or long and narrow, but the jaws were small, the eyebrows and cheek-bones were not very prominent, the nose was aquiline, and the general outline of the face oval, and probably handsome. In all points the men of the neolithic age agree exactly with the Basques of Northern Spain, the remnant of a population which at the dawn of history still maintained an independent existence in many parts of Europe."

Sir John Lubbock expresses regret that so little attention had been paid to the non-human remains met with by antiquarians in their researches, as it would be so very interesting to ascertain what animals were in a state of domestication in Northern Europe during the stone age. The men of the neolithic age exhibited a marked advance in civilization over their predecessors in the paleolithic age, and, to judge by the indications in some parts of Europe, they may be said to have enjoyed a much greater degree of comfort than many of our hapless fellow-creatures in the present day. The remains of the Swiss lacustrine dwellings show that their houses were well and substantially built. They tilled the earth, they possessed flocks of sheep and goats, and herds of cattle, while deer and other game were abundant in the forests. We have proof that they were acquainted with the art of weaving, and many specimens of a coarse kind of cloth have been discovered, but all of

them composed of flax.* That we have no evidence to show they made woollen cloth can hardly be wondered at, when we take into consideration the nature of the material. It is completely destroyed by fire, and it rapidly decays in water. A modern writer, in commenting on the absence of any remains of woollen cloth in ancient tombs, says:—"It is only under those imperfectly known and exceptional conditions in which the body is changed into adipocere and the bones into phosphate of iron, owing to the presence of salt of iron in the water, that they withstand decay."†

An instance of the existence of these conditions was afforded at the opening of a barrow by the Rev. Canon Greenwell, at Scale House, Yorkshire. In this case the body was completely changed into the substance known as adipocere. Before interment it had been wrapped from head to foot in a woollen cloth, and placed in a split oak for a coffin. A portion of this woollen cloth was so well preserved that its texture and character could be accurately observed. It was of the most simple form of woven cloth, both warp and woof being composed of threads of one strand. An illustration of this cloth is given in "Grave Mounds," by Llewellyn Jewitt.‡ On

* Keller's "Lake Dwellings," and "Constructions Lacustres du Lac Neuchatel," by E. Desor.

† *Edinburgh Review*, April, 1878.

‡ Since the above was in type a singular instance of the preservation of the fine wool of the ancients has been made public. In *Le Temps*, 4th June, 1880, mention is made of four pieces of tapestry which have been brought to light in Upper Egypt. They represent "Bacchus," "Ariadne," and "The Seasons." The web is of linen thread, and the designs have been formed in extremely fine wool (*laine d'une grande finesse*). The colours remain as bright as ever. These interesting specimens were exhibited in Paris by M. Theodore Grof, who has long

many occasions traces have been found in funeral urns which indicated plainly that the calcined bones of the deceased had been placed in a woollen cloth before interment. In more modern tombs in Northern Europe, cloaks, caps, and leggings, made of woollen cloth resembling plush, have been discovered. The age of the barrow mentioned in Mr. Jewitt's work was not clearly defined, but it was apparently at the beginning of the bronze age in Britain.

The lacustrine dwellings of Switzerland have yielded an immense quantity of most interesting relics of the stone age, from which the habits and mode of life of the inhabitants can be traced with much greater accuracy than one might imagine, in view of the great lapse of time since they existed. The inhabitants of these dwellings exhibited considerable mechanical skill in the erection of their houses. They were skilful weavers, and some of the patterns of their flaxen cloth exhibit much taste. No remains of woollen cloth have yet been found; and, taking into consideration the nature of the locality in which these remains are found, it is extremely unlikely that any traces of woollen cloth will ever be discovered.

We can scarcely doubt, however, that a people who exhibited so much ingenuity and mechanical skill—who were farmers, weavers, stock owners, and of whom we have proof that they used wheeled vehicles—would overlook such a material as wool, which was so well suited to the rigorous climate in which they lived, and

{ resided in Cairo. Mr. James Smith informs me that woollen threads occur in some Egyptian wall hangings belonging to a period about 2,000 B.C.

which they had already in their possession. Nearly all writers on the art of weaving have expressed the opinion that wool was the first material used by man for weaving into garments. The adaptation of the fleece to form threads for weaving would be too obvious to be overlooked.*

In the earlier part of the polished stone age the habits of the hunter state prevailed, the remains showing that venison was more eaten than flesh of the domestic cattle or sheep. This, however, was afterwards reversed. Throughout the whole of the Swiss lake dwellings the indications showing that the inhabitants possessed domestic sheep are plentiful. The bones prove that the breed was much smaller than the ordinary sheep of the present day. It was much finer in the bone, and possessed short, goat-like horns. This sheep was evidently the ancestor of the northern and mountain sheep of Europe. It is a curious coincidence that Sir Charles Lyell has noticed a small race of goat-horned sheep still lingering in some of the Alpine valleys of the Upper Rhine. In Keller's "Lake Dwellings" there are the following interesting remarks relating to this subject:—
"It is only in a most remote corner of our Alps, in the background of the Vorder Rhine, that, in a very singular manner, we meet with remains of the olden time . . . such as the sheep of the stone age and the last remnants of the marsh swine, though with character much obliterated and changed. It is a matter of no small importance that a race of men live in the same districts using an old dialect which, for the most part, has dis-

* "History of Worsted Manufacture," by John James ; Whittaker's "History of Manchester ;" Strutt, "On Dress."

appeared long since from other parts of Switzerland, bearing, in the shape of their skulls, the stamp of a much earlier age." The descendants of the men of the neolithic age are believed to exist in the dark races among the Highlanders of Scotland, the Welsh, the Irish of the West Coast, and the inhabitants of Western France and Spain. Curiously enough, in nearly every one of the districts mentioned, where these dark races are found, there also we find a race of small sheep, all of which are evidently descended from one type, and that type the small sheep of the stone age.

Rütimeyer describes the sheep of the Lake inhabitants as being very small, and the remains show that the sheep of Denmark during the bronze age had very slender limbs; their horses were also very small. They were succeeded by larger sheep. It is rather an odd coincidence that none of the wild races of sheep at present existing are small, while some of them are much larger than any domestic breed of sheep.

Of the race that inhabited Europe in the neolithic period, Messrs. Nott and Gliddon remark*:—"These 'Iberes,' or 'people beyond,' seem to have existed from time immemorial on the soil of France, and are still beheld distinct from all other men in the modern Basques." Traces of the habitations of this race have been found in nearly every quarter of Europe—in the Italian lakes, in the plains of the Po, in Venetia, in Bavaria, in the marshes of Pomerania, and in Britain. The remains which have been discovered show beyond a doubt that the people who dwelt in them were of one race, having the same habits and mode of life. In Italy

* "Connassiance du Mouton."

they possessed two breeds of cattle, as well as two breeds of sheep, as did also some of the Swiss lake-dwellers: but they all possessed the small goat-horned sheep of which mention has already been made, and, to judge from the remains, they must have been plentiful. Of the larger breed very little notice has been taken, and I have been unable to find anything like a description of it. The neolithic people were of small stature, elegant in form, and of great ingenuity. They were not savages, for they cultivated the earth and possessed much property in domestic animals. In the words of a modern writer—"The arts and modes of life which they introduced have never ceased to be, and all subsequent progress has been built upon their foundation. . . . The origin of domestic animals, as well as cereals, proves that the neolithic peoples migrated into Europe from the south-east, from the great mysterious birthplace of successive races—the Eden of mankind—Central Asia." The lake dwellings were occupied during a portion of the bronze age, but were abandoned before the introduction of iron. The age of the lake dwellings has been variously estimated, but the attempt to fix their date must ever be mere guesswork. M. Morlot, who has been at great pains in the matter, estimates the age of some of the neolithic dwellings in Europe at 70 centuries.

Among the animals inhabiting Ireland in post-glacial times were long-faced ox (*Bos Longifrons*), goat, sheep, wolf, fox, and dog. Remains of post-glacial mammalia have been from time to time obtained in lacustrine deposits in every part of Scotland. Among them were *Bos Primigenius*, *B. Longifrons*, horse, pig, dog, sheep, and goat. The fauna in the turbaries near Troyes,

Champagne, include dog, boar (*Sus Scrofa*), horse, sheep, and ox.*

In the *Westminster Review*, June, 1887, I find a mention of a very interesting lake dwelling discovered by a Mr. Thomas Boynton in the low-lying district of Holderness, between Hull and Bridlington. It consisted of an upper and lower structure, the former belonging to the stone age and the latter to the bronze age. The inhabitants of the lower structure were the long-headed race that at one time were spread over the whole of Europe. They were more agriculturists and husbandmen than warriors, and possessed pigs, sheep, and cattle. This is believed to be the most ancient lake dwelling yet found in England.

The records carved on ancient monuments of Egypt give us a glimpse of the rural life of a people who lived at a period so remote from our own day that the mind can scarcely realize it. In Egypt, monuments have been discovered that, as a writer in the *Edinburgh Review* remarks, "were hoary with age before the hanging gardens of Babylon were constructed, or the tombs of Etruria were plated with copper. Reaching back to a period which not so very long ago was considered to be that of the reign of chaos and old night, they loom through the grey dawn of history and tell their own story in language which each year renders less ambiguous to the student. The very life of a great people—as remote from human knowledge, a century back, as if they had been dwellers in another planet—is presented to our gaze in its minutest details." In the earliest of these records we learn that sheep abounded

* "Pre-historic Europe," by James Geikie.

in Egypt in those days, and the representations of them are frequently met with on the most ancient monuments.

Large flocks were kept near Memphis, and some of the records show that they amounted at times to 2,000. In a tomb below the Pyramids, 974 rams are represented as being registered by the scribes as part of the stock of the deceased.* Mr. Osburne† says:—"Flocks and herds were possessions in those remote ages for which Egypt was always celebrated. The domestic animals appear, from the tombs, to have consisted of two breeds of great cattle—one horned, the other hornless: asses, sheep, goats, and dogs, of one breed only. Sheep and goats were (if the testimony of the tombs is to be believed) very rare in old Egypt. The princes Eimei and Chephrenes alone, of all the nobles of the era of the Pyramids, possessed flocks of them." This writer mentions that woollen rags were found accompanying the coffin of Mencheres, in the third pyramid, from which it has been assumed that the dead were swathed in woollen cloth. The priests were forbidden to enter the temples wearing woollen garments; but, like the nobles, in their ordinary life they wore robes of woollen cloth, of rich and graceful patterns. The wool of ancient Egypt has been described as short in staple and coarse in fibre.‡ If this were the case, then the wool for making the robes of the priests and nobles must have been imported, for I cannot conceive so refined and luxurious a class wearing garments of a coarse material. The skill of the ancient

* Wilkinson's "Ancient Egypt."

† "History of the Egyptians."

‡ Kenrick's "Ancient Egypt."

Egyptians in the art of weaving was remarkable. Even with the advantages of modern machinery the delicacy of their linen textures has never been equalled. Mr. Wilkinson gives the following instance of their skill in weaving fine linen, in a description of a piece of linen cloth found in one of the tombs:—"Some idea may be given from the number of threads in the inch, which is 540 (or 270 double threads) in the warp, and the limited proportion of 110 in the woof." When we consider that the fine cambric of the present day has only 160 threads in the inch of the warp, and 140 threads in the woof, we can estimate the marvellous fineness of the old world linen instanced by Mr. Wilkinson. I cannot conceive that a people used to such beauty and delicacy of texture in the linen garments they wore would be satisfied with cloth made of a coarse woollen fabric. Either fine-wool sheep must have been reared in the country, or fine wool was imported from Phœnicia or Mesopotamia.

In ancient Assyria and Babylonia woollen garments were in much more general use than in Egypt, and from the extreme beauty and intricacy of the patterns of the robes worn by the kings and great officers of the State, as figured on the earliest monuments, we may fairly conclude they were woven in a fine material. I am told by experts that patterns of such delicacy and intricacy could not be produced with wool of a coarse quality. Of these robes Rawlinson says*:—"The garments of the kings were of a magnificence difficult to describe, and it is a noteworthy fact that the most elaborate types of all are to be found in the earliest representations."

We know as yet comparatively little of the everyday

* "Five Great Monarchies."

life of the Babylonians and Assyrians, but sufficient evidence has been brought to light to show that they thoroughly understood the rearing and breeding of sheep as well as of other stock. When the countless records they have left behind them have been carefully studied, probably we shall have some idea of the character of the sheep they bred. Their mode of managing their live stock and farms would be extremely interesting to modern husbandmen. Mr. Grote says of the Assyrians* :—
“ Their linen, cotton, and woollen fabrics were celebrated through all the Eastern regions. Their cotton was brought in part from islands in the Persian Gulf, while flocks of sheep, tended by Arabian nomads, supplied them with wool, finer even than that of Miletus or Tarentum.”

Of all the peoples of antiquity, the Phœnicians were the most successful sheep-breeders, as well as the most skilful mechanics and enterprising traders. Of their origin we know very little, but there is no doubt that, if not the first people in the East to possess the fine-woolled sheep, they certainly were the first to introduce it into Europe. The Phœnician has been described as the kinsman of the ancient Jew, but with much greater enterprise and less of religious exclusiveness, and, above all, a crafty trader. One of the principal items of their widespread commerce was the fine woollen cloth for which they were celebrated throughout the East, the fineness of its texture and the beauty of its dye being unrivalled. It is in the hands of the Phœnicians that we first hear of wool being celebrated for its fine quality, and it is an interesting circumstance connected

* “ History of Greece.”

with the history of this people that all the permanent colonies which they founded on the shores of the Mediterranean, from the Levant to the Pillars of Hercules, became celebrated for their fine-woolled sheep. Even at the very earliest times their commerce had a very wide extent. Their intercourse with the Greeks is believed by Kenrick to have extended back to a period long antecedent to the Trojan war. They carried on business relations with the countries extending from Arabia, and perhaps even Ceylon, on the one hand, to the British Isles (and, according to Nilson, to Sweden) on the other, and that at a time when the Greeks knew nothing of the world outside their own boundaries.

In the Bible, the oldest of all books, the first domestic animal mentioned is the sheep. In the book of Job, which by some is believed to be the oldest portion of the Bible, we learn that even in those remote days one proprietor had a flock numbering 1,400 sheep, besides much other live stock. The description of the management of the flock bears a striking resemblance to that followed by the pioneers of many parts of Australia. The patriarchal Hebrews were a pastoral people, inhabiting a country which was subject to long dry summers, and in which water was scarce. The sole wealth of the people was their flocks and herds. In old Australia, as on the plains of Mesopotamia, the sheep were herded during the day and folded at night, while to secure them from the attacks of wild animals they were guarded at night by a watchman.

Jacob, the most skilful sheep farmer of his day, describes the life in words that, as a bush-boy, always seemed strangely familiar to me:—"Thus I was: in the

day the drought consumed me, and the frost by night, and my sleep departed from mine eyes." The hardships endured by Jacob, and the constant care bestowed by him on Laban's flocks, have had many a counterpart in the early days of Australian colonization. The plan of taking sheep on terms—that is where he who has all the care and trouble of the flock receives a certain proportion of the increase as his share—was common in both countries, and many a wealthy Australian got his first start in life in that way. Many a hard bargain has been made on such occasions, but I never heard of any that could be compared with the one made by Jacob when he took his uncle's sheep "on terms" at Padan-aram. The mention of the change of colour in the fleece of the sheep on this occasion has led many to believe that previous to Jacob's time the sheep were all black, but there is nothing in the Bible, or in ancient history, to support this theory. The effects of Jacob's trick to influence the colour of the increase is due to what is known among stock-breeders as "mother markings," which is apparently more common among cattle than any other of our domestic animals.

The immense numbers of sheep and cattle owned by the peoples of Asia Minor, in ancient times, seem almost fabulous when we read the accounts which modern travellers give of the desert-like aspect of the greater portion of the country. That this desolation did not always exist we have ample proof; in many districts Nature has bestowed her gifts with a lavish hand, and it has required many centuries of misrule to bring the country to its present condition. Renan* describes Northern Palestine as an extremely fertile country, with

* "*Vie de Jesus.*"

a most salubrious climate—a land of the vine, the fig, and the olive, and with the most beautiful landscapes in the world. It has been reduced, by the ignorance and mismanagement of its rulers, to a condition of poverty and desolation that is heartrending ; and yet, even there, everything that fanaticism and ignorance cannot destroy is still remarkable for softness and beauty. Galilee was described by an early writer (just before the invasions of the Ottomans) as being covered with delightful plantations, and to be compared with Egypt in point of fertility. M. Renan says of Nazareth :—" It is a beautiful place, even in the present day, perhaps the only spot in all Palestine where the soul feels relieved from the burden which oppresses it amid such unparalleled desolation." It is scarcely just to attribute the desolate condition of Asia Minor entirely to the effect of Ottoman rule. There is ample evidence that not only the Holy Land, but a large portion of what is now the desert of Sahara, was, within the time of written history, a comparatively fertile land. The traces of ancient rivers are frequently met with in Syria and Palestine, while indications of irrigation works point to these countries being at one time thickly populated. The camel—that sure indication of a desert land—was formerly unknown in Northern Africa. Polyhius, in speaking of the cavalry of the Carthaginians, mentions the elephant, but not the camel. M. de Tchihatchef* cites several instances, which show that the north of Africa was, in comparatively modern times, inhabited by the elephant, the rhinoceros, and the crocodile, an animal that indicates the existence of permanent streams. It is

* " *Asie Mineure.* "

this change in the climate of Asia Minor that renders it so difficult for people in these days to understand how the Israelites could have existed in what is now the desert of Sainai for so many years.

Some idea of the large numbers of cattle and sheep owned by the people in this part of the world in ancient times may be gathered from the following instances taken from the Bible:—Abraham and Lot were obliged to separate on account of the great numbers of sheep and cattle they each possessed. During their wanderings in the desert the warriors of the Hebrew tribes made a *razzia* on the Midianites, in which they captured the enormous booty of 675,000 sheep and 50,000 camels. The daily consumption of the household of King Solomon was 10 fat oxen and 100 sheep. At the dedication of the Temple, that monarch sacrificed 120,000 sheep and 22,000 oxen. The Arabians are said to have brought as a present or tribute to Jehoshaphat, 7,700 rams and 700 he-goats. Mesha, king of Moab, was a sheep-master, who paid a tribute of 100,000 lambs and 100,000 rams to Jehoram, king of Israel. That the ancient Hebrews possessed great numbers of sheep and cattle cannot be doubted, but there is no evidence in the Bible to show that they paid any attention to breeding high-class stock, or that they made any attempt to improve their stock by obtaining superior animals from the surrounding people. There is no mention made in the Bible of any difference in the quality of their stock, or that they possessed more than one breed of sheep (which was a woolly sheep, and not the hairy sheep found in some parts of the East), except in one instance, in which Moses speaks of rams of the breed of Bashan,

as if they were of a different character to the general sheep of the Hebrews.

The numbers of stock in some of the instances I have given from the Bible are said to have been exaggerated or misinterpreted, but an extract from M. Jean Chardon's works (a traveller whose statements have generally been accepted as truthful) shows that even in modern times immense quantities of stock are still reared in parts of Asia Minor. He states that in the neighbourhood of Aleppo, in one day, he passed a caravan of Turcoman shepherds, which consisted of 400,000 horses, cattle, and asses, and 3 millions of sheep. His statement has been quoted by many writers, all of whom give it credence. Unfortunately, the works of Jean Chardon to be found in the Melbourne Public Library do not contain the account of his visit to Aleppo, and I have been obliged to take the extract at secondhand. The desolation caused by these vast bodies of stock moving across the country is very graphically described in the Bible on the occasion of an incursion of Midianites: "They left no sustenance for Israel, neither sheep, nor ox, nor ass. . . . They came as grasshoppers for multitude, for both they and their camels were without number, and they entered into the land to destroy it."

When and by what people domestic sheep were first bred in Europe, and whether they were derived from indigenous wild ancestors or brought from the East, we are never likely to know. On this subject, Mr. Fisk says*:—"It is certain that the domestic animals did not originate in Europe, but were domesticated in Central Asia, which was the home of their wild ancestors, and,

* "Excursion of an Evolutionist."

Moreover, they were not introduced into Europe gradually, one by one, but suddenly and *en masse*." The general opinion of writers who have dealt with this subject is that the sheep certainly was thus brought into Europe. That our domestic cattle are derived from wild European types is generally believed. The wild white cattle of Europe have all the good points of the most improved breeds of the present day, while the wild boar is, or was until lately, common all over Europe.

Though the weight of authority is against me, I cannot help thinking that the ancestor of the long-wool type of sheep lived in a temperate, if not in a cold climate, and that they certainly were not mountain sheep. Occasionally paleontologists notice the remains of what they describe as "marsh sheep" in Europe, but beyond the term given I have been unable to discover in what respect they differed from the other sheep of the paleolithic period. There is no doubt that the Aryans brought with them, when they swarmed over Europe, sheep as well as other domestic animals. According to Max Muller,* "it can be proved by the evidence of language that before their separation the Aryans led the life of agricultural nomads; they knew the arts of ploughing and making roads, of building ships, of weaving and sowing, of erecting houses; they counted at least as far as 100; they had domesticated the most important animals, the cow, the horse, the sheep, the dog; they were acquainted with the most useful metals, and armed with iron hatchets, whether for peaceful or warlike purposes." The sheep of the Aryans was a woolly sheep, but of what

* "Lectures on Language."

character, and what type of modern sheep are descended from it, we have not even the materials to form a guess. But though the Aryans brought sheep with them it does not prove that the sheep did not exist in Europe before they came.

The earliest written notice we have of sheep in Europe is to be found in the *Iliad*, where Thrace is called the "Mother of Flocks." The allusions to sheep and cattle in the *Iliad* are very numerous, and, from the character of the remarks made, it is evident that at the time it was written there was a general and familiar knowledge of the details of pastoral life among the Greeks, that the main principles of stock-breeding were well understood, and that husbandry was considered an occupation worthy of the noblest in the land. The sheep appears to have been used as a dairy animal, if we may judge by the following lines* :—

“ On the other hand, the Trojans, as the flocks
That in the courtyard of some wealthy lord
In countless numbers stand, at milking time
Incessant bleating when their lambs they hear.”

That they were not hairy sheep is shown in the following description of Ulysses :—

“ But he himself moving through the ranks
Inspecting, like a full-fleeced ram that moves
Majestic through a flock of snow-white ewes.”

In the description of the ornamentation of the shield made by Vulcan for Achilles, a very pleasant picture of rural life is presented to the reader. The details are given with such minuteness as to show conclusively that

* “ *The Iliad* ” (Lord Derby’s translation).

the writer had an intimate knowledge of live stock, husbandry, and tillage.

In the *Odyssey* the everyday incidents of pastoral and agricultural life are almost as frequently alluded to as in the *Iliad*. The sheep of the Cyclops Polyphemos are described in the following terms* :—"The rams of the flock were well nurtured and thick of fleece, great and goodly, with wool dark as the violet." Ulysses thus describes his escape from the Cyclops' cave :—"But, as for me, I laid hold of the back of a young ram, who was far the best and the goodliest of all the flock, and curled beneath his shaggy belly there I lay, and so clung, face upward, grasping the wondrous fleece with a steadfast heart." The wife of Alcinous is found sitting by the hearth with the women, her handmaids, spinning yarn "of sea purple stain" (alluding, doubtless, to the purple dye obtained from the murex by the Phœnicians). Helen is described as seated on a rug of *soft* wool, having by her a golden distaff charged with wool of violet blue.

In speaking of the westward spread of the flocks, Professor Owen says :—"From Thrace we trace them to Thessaly, and thence to Greece, where they were so generally and successfully reared that Arcadia became the scene of all that the poets sing of the beautiful in pastoral life. Here the god Pan was supposed to be born—Pan, the god of Arcadia—and to trace his worship from Greece to the colonies settled in Italy and Spain is to follow the progress of the diffusion of the domestic flocks and the pastoral people over whom Pan specially presided." The sheep thus spread must have been of a superior quality, and hence their renown. That

* Butcher and Lang's "*Odyssey*."

domestic sheep were possessed by the inhabitants of Europe many centuries before the spread of the Phœnician sheep, I have already shown.

What people introduced the fine-wool sheep into Europe is a question that cannot fail to be interesting to the flock-masters of Australia, who have achieved a well-earned and world-wide fame for the beauty and high quality of their wool. Some writers have given the credit of distributing fine-woolled sheep over Europe to the Greeks. Beyond a doubt they introduced them into Italy when they colonized the southern part of that country; and, for many centuries after, the Romans called the fine-wool sheep of Apulia "Greek sheep." The Greeks paid great attention to sheep-breeding, and on this subject MM. Nott and Gliddon* remark:—"Among the Greeks the sheep was held in great honour, and received the most assiduous care. The sheep-breeders of that country imported rams from Colchis at great cost. . . . It is very probable that the expedition of the Argonauts in search of the Golden Fleece had no other object than to obtain the finest animals of the race so much esteemed, which fed on the pastures of Colchis." The breeding and rearing of fine-wool sheep were carried to a remarkable extent by the Greeks, even at a very early period. The fleeces received the greatest care, and so particular were they, that the sheep were covered with skins or cloths, in order to soften and beautify the wool, and the same practice was evidently followed by the sheep-breeders in many parts of Asia Minor. Laodicea was celebrated for its black wool, which was considered as fine and soft as

* "Connaissance General du Mouton."

that of the noted Milesian flocks. In Cappadocia and Pontus it was the custom to cover the fine-wool sheep with skins to preserve and increase the beauty of the wool. Strabo mentions several places in Asia Minor, the sheep of which were in his time celebrated for the fineness and softness of their wool. Pliny states that many parts of Asia possessed sheep that yielded a red-tinted wool, which was evidently considered to be of great beauty, as we find it compared to the auburn locks of a girl. The high estimation in which the sheep bearing coloured wools were held in ancient times has led to the supposition that their value was owing to the ignorance of the people in the art of dyeing. The facts, however, are all against this theory, for, in the most ancient times of which we have any record, the inhabitants of Asia Minor appear to have had considerable knowledge of dyeing, while the beauty of the cloths dyed by the Phœnicians is supposed to have never since been equalled. Coloured breeds of sheep appear to have been kept in most European countries till so late as a century ago. Spain was celebrated for its black wool when we first hear of the country, and, strangely enough, among the first importations of merino sheep to America were some black merinos sent from Spain.

In breeding these coloured sheep the ancients, perhaps, showed much more judgment and good sense than people are inclined to give them credit for. Undyed wool is known to be much more lasting when made into cloth than white wool dyed. A very interesting experiment was made by Miss Hope Johnson, of Marchbank Wood, Moffatt, in keeping a flock of coloured sheep, an account of which is given in *Chambers's Journal*, 1878. Miss

Johnson commenced her flock in 1850, with twenty coloured sheep, composed of Cheviots, half-breds, and Southdowns. This flock she worked up to 250 head, of every shade of colour and every quality of wool. She found these coloured sheep were much more hardy and less liable to disease than the white-woolled sheep. Their wool was much admired. It made admirable stout linseys for dresses, and for men's clothing there was nothing to compete with it, either for beauty or "everlasting wear." Miss Johnson says of this cloth:—"It used to be a joke that no amount of tear and wear would ever destroy or even fade it. A dyed cloth would be threadbare and almost colourless before the sun and weather ever made the slightest approach to a weather-beaten look upon the undyed black, brown, or gray wools." Miss Johnson kept up her flock till 1870, and then parted with it.

The fine-wool sheep of the ancient Greeks was evidently from the same source as the fine-wool sheep of the Phœnicians, if, indeed, the latter were not the parent stock. The "Greek sheep" were greatly prized in Italy. The high cultivation of these animals, commenced in Asia Minor and Greece, was carried still further by the Romans. The sheep were rendered extremely delicate by the pampering they received, till it was only at great expense and trouble that a flock of them could be maintained. They were scarcely ever permitted to graze in the fields, but were kept in barns or stables nearly all the year round. They were covered with fine woollen cloths, the best of which could be obtained only in Arabia. Rams possessing this fine, silky wool were sometimes sold as high as £250 a piece, and the wool

occasionally realized as high as 12s. per lb. Pliny mentions that up to his time no wool had exceeded that price. Columella, one of the best writers on the sheep of his time, says* :—" Our people formerly reckoned that the Milesian, Calabrian, and Apulian were of an excellent kind, and that the Tarentinian were the best of them. Now those of Gaul are esteemed more valuable, and of these the Altinian (now called Altino, at the mouth of the Sile, which falls into the Gulf of Venice) are preferred to all the rest. Also those which have their folds upon the lean fields about Parma and Modena. The white colour, as it is the best, so also is it the most profitable, because that of it very many other colours are made, but this is not made of any other. The black and brown, dark colours which Polentia in Italy and Corduba in Bætica furnish us with, are of their own nature commendable for their price. Nor does Asia produce a less plenty of those of a bright red colour, which they call erythrean." He says it was rarely advantageous to rear Greek or Tarentinian sheep unless the owner resided on his farm, so that he might see they were not neglected. They were reared in a thoroughly artificial manner, and, being so much more delicate than ordinary sheep, were seldom permitted to go on the pastures. It was the common practice to give the milk of two ewes to one lamb, so that it might not be too great a drain on a ewe to rear her lamb. Aristophanus mentions that the Athenians imported wool, for manufacturing into cloth, from Phrygia and Miletus, while Herodotus says that Phrygia was the richest country in the world for wool.

* English Translation, MDCCXLV.

Columella thoroughly understood the principles of sheep-breeding; and, to judge by the advice which he gives for improving the stock by judicious selection, and the necessity which he maintains exists for keeping the breed perfectly pure, it is very probable, as a French writer remarks, that "the Greeks and Romans had their Bakewells and Jonas Webbs, and that the art of breeding high-class sheep was fully developed among them."

The cloth made by the Romans appears to have possessed wonderful lasting properties, if we may judge by some of the instances given. Pliny says the *prætextæ* of Servius Tullius, with which the statue of Fortune (dedicated by him) was covered, lasted until the death of Sejanus; and it is a remarkable fact that during the period of 560 years they had never become tattered (or rather changed in colour), or received any injury from moths. Fine worked cloths were very fashionable among the Romans, and realized enormous prices. In Scipio's time, Babylonian covers for couches were selling for 800,000 sesterces (about £25,000). Of the Babylonian manufactories, Layard remarks*:—"The Babylonian carpets, silks, and woollen fabrics, woven or embroidered with figures of mythic animals and with exquisite designs, were not less famous for the beauty of their texture and workmanship than for the richness and variety of their colours. The 'much sindones,' or flowing garments, were the work of the looms of Babylon, even long after she had ceased to be a city." It was no doubt "a goodly Babylonish garment" of this description that brought about the ruin of Achan, the son of Carmi, at the destruction of Jericho.

* "Nineveh and Babylon."

The purple dye of the people of Tyre appears to have been as lasting as the fine-wool cloths of those ancient days. We learn from Plutarch that when Alexander took possession of Susa he found among its treasures 500 talents in weight of purple cloth from Hermione, in the Peloponnesus, which had been laid up for 180 years, and yet retained all the freshness and brilliancy of its original colour.

It is impossible to institute a comparison between the fine wool of the Phœnicians, ancient Greeks, and Romans and that of the present day; but from the knowledge they undoubtedly possessed of the art of breeding and rearing high-class sheep (a knowledge, by the way, quite equal to that of the most advanced sheep-breeders of the present day), I am inclined to think their wool was fully equal, if not superior, in quality to the best modern examples. I am induced to arrive at this conclusion from the fact that extreme fineness was the quality most prized by the ancients, and to preserve which they took so much pains in breeding and rearing their fine-woolled sheep. Cloth of such exquisite and intricate patterns, which we know from the sculptures on ancient monuments they possessed at a very remote period, could not be woven in any but a very fine fabric. All the representations of the woolly sheep of the ancients that I have met with portray an animal of the merino type. There can be no mistaking this—the form of the body and character and shape of the head and horns are unmistakably those of the merino.

The only chance of comparing the fine wool of the ancients with that of the modern merino that I know of occurred while Dr. Schliemann was making his in-

teresting discoveries on the site of ancient Troy, but unfortunately the opportunity was missed for want of a skilled examiner to conduct the experiments. In describing his discoveries, Dr. Schliemann says* :—" One of the most curious objects ever found in my excavations is undoubtedly a distaff 11 inches long, around which is wound lengthways a large quantity of woollen thread as black as coal, evidently from being charred. I discovered it in the Royal Mansion, at a depth of 28 feet below the surface."

In the fearful times that followed the disruption of the Roman Empire, the delicately-reared fine-wool sheep of Italy and the East, whose constitutions had been enfeebled by unnatural pampering and high feeding for so many generations, disappeared almost entirely when subjected to neglect and hardship, or became degenerated by being mixed with the common sheep of the country. As a distinct race, they almost ceased to be; the only trace of them I have been able to find in Italy was in an out-of-the-way corner of Piedmont, where a type of fine-wool sheep, evidently a remnant of the old breed, survived so late as the last century. They exhibited something of the beautiful quality of wool of the old breed of fine-wool sheep, but the staple was so weak as to render the wool of but little commercial value. They appear to have completely died out. But though the old world breed of fine-wool sheep was lost to Italy, Greece, and the countries of Asia Minor, where it had formerly flourished, it was preserved in the south-west corner of Europe; and in the following pages I purpose tracing the history of this race of sheep up to the time when the celebrated merino flocks of Spain were distributed over the world.

* "*Ilios*," by Dr. Schliemann.

HISTORICAL SKETCH OF THE MERINO.

IN the foregoing introduction I have shown that the ancient inhabitants of Asia Minor, and after them the people of Greece and Italy, possessed a breed of sheep bearing wool of high quality. The introduction of these fine-wool sheep into Spain has been ascribed by some to the Greeks; but as the Phœnicians and Carthaginians had a monopoly of the trade with Spain for many centuries before the Greeks appeared on the coast, I think the credit of introducing the fine-wool sheep into Spain must, in all fairness, be given to the Phœnicians and their kindred, the Carthaginians. This enterprising race traded with Spain at a very early date, and built several important towns there, among the earliest of which was Cadiz, which was founded B.C. 1,100. In time the native population, becoming alarmed at the growing power of the Phœnicians, called in the aid of the Carthaginians to expel them, and the Carthaginians ended by taking possession of the country themselves.

It is a remarkable fact in connection with the fine-wool flocks of Spain, that those localities in which the Phœnicians and Carthaginians were the longest established have always been celebrated for the high quality of their fine-wool sheep. Spain is admirably suited by nature for the production of fine-wool sheep in

their highest perfection. The atmosphere is pure and dry, and there is a smaller rainfall on the Castilian plateau than in any other part of Europe.

That the Carthaginians introduced their fine-wool sheep when they took possession of the greater part of the country, we may fairly assume from the fact that under their rule Spain became famous throughout all the countries bordering on the Mediterranean for the excellence of its woollen cloths. The Carthaginians were not merely traders; they paid the greatest attention to agriculture and the breeding and rearing of stock. In speaking of this feature in their character, Mr. R. Bosworth Smith says*:—"It is remarkable, again, that, while in no city in the ancient world did commerce rank so high, the noblest citizens even of Carthage seem to have left commercial enterprise to those who came next below them in the social scale. They preferred to live on their estates as agriculturists or country gentlemen, and derived their princely revenues from their farms or their mines, which were worked by prodigious gangs of slaves. The cultivation of the soil was probably nowhere in the ancient world carried on with such rich results as in the smiling country which surrounded Carthage." Agriculture was held in special honour, and was so thoroughly well understood, that an exhaustive treatise on husbandry in all its branches, written by Mago, a Carthaginian general, was held in such high estimation that when the Romans conquered Carthage they reserved for this work alone the honour of an authorized translation into Latin and a formal recommendation of its practical maxims to the thrifty husbandmen of Rome.

* "Carthage and the Carthaginians."

In alluding to this work, Columella, himself a celebrated writer on agriculture, says:—"We honour, above all other writers, Mago, the Carthaginian, the father of husbandry." We may naturally assume that, with a people who understood and were so devoted to husbandry, the greatest care would be bestowed upon the fine-wool sheep in Spain when it was discovered that the climate was well fitted for the production of wool of high quality; and that this was the case is evident from the fact that the woollen fabrics of the country soon became famous for their beauty and fineness. From time immemorial it has been the custom of the various races who have held possession of Spain to practice what is called "transhumania"—namely, travelling the flocks from the warm plains of the south to pass the summer in the mountains of the north, and returning again to the low lands in the winter. This custom seems to have been a very general one in ancient as well as in modern times. It has been practised in many countries, and it has even become established in Australia. The fine-wool sheep of Spain, which many centuries after were known by the name of merinos, nearly all belonged to these travelling flocks.

After the long, toilsome conquest of Spain by the Romans, all the writers who describe the products of the country speak of its flocks of sheep as having been for a long time celebrated for the beauty and high quality of their wool. Strabo and Pliny describe these sheep as being of different colours—namely, black, white, and two shades of red. The finest of the black wools came from Turditania, a district of Bætica, corresponding with modern Granada, Andalusia, and part of Estremadura.

According to Strabo, it had been the custom of the country to export large quantities of garments, but in his time the wool was sent out in an unmanufactured state. This wool he describes as being finer and more beautiful than that of Coraxi (a district situated in the west of the Caucasus). He quotes the Spanish rams as being valued at the price of a talent per head, and he describes the stuffs manufactured by the people of Bæstania as being of incomparable texture. Pliny says that Bætica excelled all the other provinces in the richness of its cultivation and the peculiar fertility and beauty of its vegetation.

The Roman conquerors settled in Spain in large numbers, principally in Bætica, a district which has always possessed great attractions for the various invaders of the country. They practised the same mode of agriculture, and stock-breeding and rearing, that had been so long and successfully carried on by their predecessors.

The crossing of the ancient fine-wool sheep of Spain with wild African rams has been the cause of much speculation. The translation of Columella's work, from which I have already quoted, has the following remarks on this subject:—"At a certain time when some wild and fierce rams of a wonderful colour, as other beasts, were brought from the neighbouring parts of Africa to the municipal city of Cadiz, by those who entertained the people with public games and shows, M. Columella, my uncle, a man of a quick discerning genius, and a famous husbandman, having bought some of them, carried them to his own lands, and when they were tamed admitted them to couple with covered sheep."

These, at first, brought forth rough bristly lambs, but of the colour of their sire, and afterwards they themselves being put upon Tarentinian sheep generated rams of a finer fleece. Moreover, whatever was afterwards conceived by them resembled the colour of the sire and grandsire, but the delicacy and softness of the dam. In this manner Columella said that any colour or outward appearance whatever that was in beasts did return with a mitigation of their fierceness and wildness, through the several degrees of their descendants."

Some writers have assumed that this cross between Tarentinian ewes and wild African rams was the origin of the merino, but the theory is entirely without confirmation. It was merely a curious experiment in sheep-breeding. From the short notice Columella gives of it, we may rest satisfied that the produce was more valued for the colour than for the fineness of their fleeces. An almost identical cross was made in the early days of the settlement of New South Wales, when pure merino rams were bred with hairy Indian and Cape sheep. The same results followed in Australia as in old Spain. By crossing for a few generations to the pure fine-wool type, all, or nearly all, traces of the hairy sheep were obliterated. But for a great many generations afterwards the indications of the base blood would occasionally show, and it has ever been the care of Australian husbandmen to eliminate from their flocks all sheep showing the stain. The husbandmen of old were sufficiently proficient in their business not to cross fine-woolled sheep with hairy ones in order to improve the fleece. They had the ancient fine-woolled sheep in their possession, and we need look

no further for the ancestor of the noble merino. The incident is interesting from the fact that it is the only occasion of wild sheep having been found of such a pronounced colour as the African rams mentioned by Columella.

During the long dominion of the Romans, Spain enjoyed a peace and prosperity to which it had long previously been a stranger, and which it was not again to experience until the country came under the sway of the Moors. Between these two periods there occurred an interval of about three centuries, which was taken up with the invasions of the barbarians and the conquest of the Visigoths. In this period the agricultural development of the country was entirely suspended. Fortunately the mode of rearing sheep practised in Spain was very different from that adopted in Italy, Greece, and Asia Minor. In the last-named countries, on the breaking up of the Roman Empire, the fine-wool sheep, with their constitutions enfeebled by centuries of unnatural pampering, soon succumbed under neglect and hardship. In the Spanish peninsula the practice of transhumana had reared a hardy breed of sheep, which were able to survive the troublous times which followed the decadence of the Roman power. But for this hardihood the ancient breed of fine-wool sheep would, in all probability, have been entirely destroyed. The Visigoths respected nothing but war and the chase, and they held agriculture and pastoral pursuits in thorough contempt. The ancient mode of rearing sheep was continued by the inhabitants, and, no doubt, after a time, the conquerors found their advantage in it. In spite, however, of the neglect of the rulers, it is evident that all care of the

flocks was not dispensed with, for we find in the fifth century there was formed an association of sheep-owners, having for its object the improvement and safety of the flocks, which shows that even at that time sheep-breeding was regarded as an important industry.

The Arabs were the next race who appeared as conquerors on the soil of Spain. Charmed with the beauty of their conquest, they settled permanently in the country, and resumed its agricultural development, so long neglected by the Visigoths. They gave full scope to their industrial instincts, and under their long rule—from the 8th to the 13th century—Spain advanced to the front rank among European nations in agricultural and industrial pursuits. They established manufactories for making carpets and woollen fabrics of all kinds, the finest in the world; and their goods were eagerly bought in the markets of Europe, Africa, and Asia Minor. They introduced irrigation, and brought the agriculture of the country to a high point of perfection. They were skilful breeders of stock, and they came from a country where transhumana was understood and practised. In their hands the fine-wool sheep of Spain were brought up to their former high standard of excellence, if, indeed, that standard was not surpassed. It has been questioned if they were content to improve, by good management, the breed of fine-wool sheep they found established in the country, or whether they introduced superior sheep from Africa. There is a tradition to the effect that the Moors did bring over sheep from Africa, which is mentioned by several writers, but it is unsupported by any good evidence. From what we have seen of an association of sheep-owners being formed in the 5th century, it is

extremely probable that the fine-wool sheep of the country were not destroyed under the rule of the Visigoths; but it is also very feasible that the Moors of Spain, who were in constant communication with their co-religionists in Africa, and whence they were constantly receiving reinforcements, may have brought over African fine-wool sheep, particularly if they considered their introduction would have a beneficial effect on the fine-wool flocks of Spain. On this subject, M. Baudemont remarks*:—"The fine-wool flocks of Spain were originally the same as the fine-wool sheep of Africa, whether they were introduced by the Phœnicians or the Carthaginians. If the Arabs brought over African sheep, they simply went to the fountain-head; the breed was not changed. All external conditions and mode of breeding were the same in both countries." M. Baudemont carefully studied the history of the merino sheep; and I am indebted to his valuable work for much interesting information. Even in the present day, among the wandering Arab tribes of Algeria, traces of the ancient fine-wool sheep are to be found. A commission appointed by the French Government to examine the Algerian wools, with a view to their improvement, found one sample from a breed of sheep on the frontier of Tunis which exhibited a decided merino type. The sheep from which this wool was taken are to be found at not a great distance from the site of ancient Carthage. The breed is looked upon by the Arabs as a very ancient one.

An article appeared in *Harper's Magazine*, May, 1884, from which I cull the following extract, indicating the existence of a breed of fine-wool sheep in that part of

* "Les Merinos."

Northern Africa known as Kairwan :—"The jâram is the degenerate descendant of the Roman toga, but it is to be hoped the Roman togas were clean, and covered cleaner citizens. One sees some, it is true, of a very fine texture, manufactured in the Djerid (the country of golden dates and silky sheep), but, owing to the negligence of those who wear them, these luxurious garments are soon unrecognizable."

General Daumas* incidentally mentions a peculiar breed of fine-wool sheep in Algeria, which I have not found noticed by any other writer. Of these sheep he says :—"In the Sahara there is a race of sheep that yields a magnificent wool, very soft, but not very long. This wool is employed in the manufacture of articles of luxury. These animals are nearly red in the head, and the ewes give a great deal of milk. It is said of the finest ewes of this breed—

‘They see like an owl,
And walk like a tortoise.’

Their wool descends to their hoofs, and so completely covers their heads that literally nothing but their eyes is visible." General Daumas lived eighteen years in Algeria, during which time his official duties brought him into constant and intimate intercourse with the Arabs, and he had thus ample opportunity of studying their habits and mode of life. He was a good judge of stock, and not likely to make any great mistake in describing any domestic animal that came under his notice.

An illustration of fine-wool sheep still existing in Africa was furnished by the Exhibition held in London

* "The Horses of the Sahara."

in 1851, when some woollen cloths from Tunis were shown, which were greatly admired at the time. The wool from which these cloths were made was from the flocks of sheep belonging to the Bey of Tunis. I have found two or three casual notices of these sheep, when they have been described as merinos, but I have been unable to get any positive information as to their history. Whether they are merinos imported from Spain, or a remnant of the ancient fine-wool sheep of Africa, I have been unable to discover.

In his inquiry into the origin of the merino sheep, M. Baudemont remarks* :—"There are three suppositions put forward to explain the formation of the merino breed. According to the first, it is merely the sheep of ancient times improved by those who in turn possessed the country, the last being the Arabs. According to the second supposition, the merino race began with the Arabs, who obtained the original stock in Africa, and, encouraged by the industrial results, brought it to a high state of perfection by their skill in breeding. If we are to believe the third supposition, the merino sheep resulted from a cross between the ancient fine-wool sheep and the fine-wool sheep of the Arabs. If I have properly interpreted the facts, all these opinions are partly true. They all tend to the same result, the unity of the merino race. Judging by the facts, the merino breed appears to us as the result of an intelligent selection, followed up by all the possessors of the land under the inspiration of the same idea—that of the production of fine wool, which was fully obtained under the Arabs. We arrive, therefore, at the conclusion that

* "Les Merinos."

the merino breed is of ancient and pure blood, and consequently powerful by its homogeneity. I know of no equal to it in this respect but the Arab breed of horses. What proves this purity, this power, this antiquity, is that the merino breed preserves its characteristics under the most diverse conditions of climate and mode of culture; in Sweden as in New Holland, at the Cape of Good Hope as in North America, in the sheepfold as in transhumania. It has lived through the most troublous times in the history of Spain without suffering alteration. It has been preserved alike under the intelligent treatment of the Arabs as under the Visigoths, when, of all branches of agriculture, the rearing of sheep was the most neglected." Another supposition as to the origin of the merino, and one that still finds supporters, is that the merino was formed by crossing English sheep with the native sheep of Spain. This opinion was put forward in *Hall's Chronicle*, 1548, in respect to "certayn Cottesokle shepe" which the King of Castile was allowed to export from England in the reign of Edward IV.

In alluding to the character of the various races who established themselves in Spain, Mr. Bosworth Smith says*:—"Of all the foreign nations—Phœnician, Roman, Gothic, Vandal, Arab—which have occupied any considerable part of Spain, two, and two only, have governed it in its own interest, and, in spite of differences of creed and of race, have governed it on the whole with toleration, with humanity, and with good faith. The one was the Barcine family of Carthage, and the other the Omniade Kaliphs of Arabia." The Phœnicians and

* "Carthage and the Carthaginians."

Carthaginians, like their kindred race of the great Semitic stock, the Arabs, were as much celebrated for their skill in breeding horses as for rearing fine-wool sheep. The Phœnicians are supposed to have introduced the horse into Egypt in the 18th dynasty, and to have taken horses to Britain at a very early period, while it is to the Arab horse we owe the most beautiful and the fleetest of all animals—the English racehorse.

On the expulsion of the Moors from Spain, a great change came over the country. The population was enormously reduced by death and exile; the manufactures that had attained such a well-deserved renown in the markets of the world were so much neglected that in a short space of time they almost entirely disappeared. When Ferdinand took Seville from the Moors, in 1248, there were in that city no less than 17,000 looms for the weaving of woollen fabrics. When the city was captured, fully 300,000 of the inhabitants exiled themselves, and even at the present day the city of Seville does not contain over 100,000 inhabitants. More than a million of men, the greater portion of whom were workers in wool, who had hoped to escape exile by embracing Christianity, were forced to leave Spain, and with them disappeared the skill and industry of the country. They left a void that the silver and gold of the new world could not fill. A few of the Spanish nobles foresaw the irreparable injury that would be done to the country by thus driving out of it all the most skilful artisans and agriculturists, and endeavoured to prevent such a calamity, but they were powerless against the great dignitaries of the Church, who had determined to extirpate the Moorish race from the soil of Spain.

Sir W. Stirling Maxwell remarks* :—"The landowners of Andalusia, indeed, learned that their lands had become worthless since they were deprived of their former cultivators. The domains of the Crown, after the failure of one attempt to colonize them with Christians, were sold in 1597, as costing more than they yielded. The Patriarch of Antioch, seeing at the last moment the ruin of his Archiepiscopal revenues, joined in the remonstrance of the nobility and made a feeble and disgraceful defence for the vassals whom he had spent his life in maligning and persecuting." Strange reasons were given for this persecution. One of the charges brought against the Moors by J. de Ribera, Archbishop of Valencia, was that the skill, industry, and frugality of the Moors enabled them everywhere to monopolize all useful and profitable occupations; to live, thrive, and pay rents in the most barren districts of Spain, while the most fertile were unproductive in the hands of the Spanish peasantry.

Under the Moors the fine-wool sheep of the country numbered seven millions, but, by the neglect and bad management of the Christians, they became so reduced that, in the reign of Philip IV., there were only two and a half millions of fine-wool sheep in Spain. Europe owes a debt of gratitude to the Moors for the advance they made, during their occupation of Spain, in agriculture and the industrial arts. Gibbon says of them† :—"In the space of two centuries the gifts of nature were improved by agriculture, the manufactories, and commerce of an industrious people, and the effects of their diligence have been magnified by the idleness of their fancy. The

* "Don John of Austria."

† "Decline and Fall of the Roman Empire."

Arabs might exaggerate the truth, but they created and they describe the most prosperous era of the riches, the cultivation, and the populousness of Spain." Further evidence as to their character is given by A. M. Sané:—"They were shepherds and farmers, sailors and soldiers; they created (in a certain degree) the celebrated flocks of Spain, and they greatly improved the native breed of horses by the introduction of a large number of Arab horses. All contemporary authors speak in terms of admiration of the marvellous cultivation of Granada, Murcia, and Andalusia."* From the prosperity that reigned everywhere under the Moors there was a sudden transition to the extreme poverty that prevailed under the Christian rule. One writer says,† that had it not been for French workmen harvesting their crops and building their houses, they would have run great danger of dying of hunger or being obliged to live in tents. Another writer‡ remarks, that at this time (17th century) large numbers of labourers from Bearn and the neighbourhood in France used to visit the country periodically for the purpose of ploughing the land and gathering the crops. Buckle mentions§ that "early in the 18th century, Rippenda, in hopes of stimulating Spanish industry, established a large woollen manufactory at Segovia, which had once been a busy, prosperous city. But the commonest process had now been forgotten, and he was obliged to import manufacturers from Holland to teach the Spaniards how to make up the wool, though that

* "Quelques Reflections sur les Musulmans d'Espagne."

† "Memoires du Marechal de Grammont."

‡ Arsens de Sommerdyck, "Voyage d'Espagne."

§ "History of Civilization."

was an art for which, in better days, the town had been especially famous."

With such evidence before us of the state of degradation which Spain had reached, it is not surprising that the breeding and rearing of the famous fine-wool sheep of the country was greatly neglected. Indeed, the wonder is that the breed was not completely destroyed by being contaminated with the "Chunas," as the common coarse-woolled sheep of Spain were called.

I have not been able to ascertain at what period the term "merino" was first applied to the fine-wool sheep of Spain, or even what is the origin and derivation of the word. Of the few writers who have taken any interest in the matter, no two are of the same opinion on the subject. A note to Prescott's "Ferdinand and Isabella" * gives the following derivation of the word:—"Merinos is derived by Conde from *madinos*, signifying 'wandering'—the name of an Arab tribe, who shifted their places of residence with the seasons." Laborde's remark, that the travelling flocks only were called merinos, favours this supposition. The "Encyclopædia Londoniensis" has the following remarks on this subject:—"The term merino, in the Spanish language, is an adjective, derived from the corrupt Latin *merimus* or *majorimus*. When united with *orijas*, it signifies the royal judge or superintendent of sheep-walks. At the period when the transhumantes were established, they became the objects of police, and were placed under the exclusive care of mayors, with public walks and large districts allotted for their sustenance, and were termed *merinos orijas*, or the sheep under the care of the merino

* Taken from "Hist. de los Arabes en Espana."

or mayor. The names peculiar to these flocks, such as *mesta*, *cavaña*, &c., are derived, not from the Moriscos, but from the provincial Latin that prevailed in Spain before and after it was subdued by the Goths. The management of the flocks is peculiarly Roman, the 'merino' or 'mayor' corresponds exactly with the *magister pecoris* of Varro and Columella." Not a few of the writers who have considered this question trace the origin of the word from *marino*, thereby signifying that the breed came from beyond the sea. In a note to a report to the Council of Castile, by Don Gaspar, it is stated that in the 11th century Alphonso XI. imported English sheep into Spain in decked vessels; and Sarmiento considered that the fine-woolled sheep obtained from this circumstance the name of *marinas*, which was afterwards changed to *merinos*.

There appears to have been several very early shipments of sheep from England into Spain. An importation of English sheep into Spain occurred in 1394, when they formed part of the dowry of Catherine, daughter of the Duke of Lancaster, on her marriage with the heir apparent of Castile.* A note in Prescott's "Ferdinand and Isabella" states that English sheep, at that time, were esteemed above those of every other country for the beauty and delicacy of their fleeces.

This fineness of English wool is often mentioned by old writers, and hence the supposition that the fine-wool sheep of Spain are derived from their importation into that country. We have seen that the flocks of Spain were enormously reduced after the conquest of the Moors, and doubtless the English sheep, being of a very

* "Encyclopædia Britannica."

useful character, would be gladly received by the Spanish for the purpose of re-stocking the country. In England we have no remains of any fine-wool breed of sheep except the Ryelands, which presents a marked contrast to all the other native breeds. It is believed to be descended from a fine-wool breed of sheep introduced by the Romans when they established woollen manufactories in England. In this case it would be of the same race as the Spanish fine-wool sheep, and the portraits of the old Ryeland breed favour this supposition.

That the merino is descended from any sheep imported from England into Spain cannot be entertained for a moment by anyone having a knowledge of the character of the breed. Besides, we have evidence that the pure race was cultivated in Spain many centuries before it is said to have been originated by crossing Spanish with English sheep.

Though the flocks of merino sheep were greatly reduced after the expulsion of the Moors, all care of them was not abandoned, and occasionally mention is made of very high prices being paid for rams of superior excellence. In the middle of the fourteenth century, Don Pedro IV., King of Castile, learning there were sheep of very high quality reared in Barbary, imported into Spain a number of rams and ewes (to these sheep the name "Granados Merinos" is given), and they are said to have succeeded very well for over two centuries.* Afterwards, in the reign of Ferdinand and Isabella, Cardinal Ximenes, on the taking of Oran, in 1509, seized on the finest flocks of sheep in that country and brought them

* "Dictionnaire d'Histoire Universelle."

over to Spain.* It is a curious coincidence with this name of merino that a Berber family named Merine obtained supreme power in Africa (or the country now called Morocco) about the middle of the 13th century, and held their sway for nearly three centuries.

As the greater number of the fine-wool sheep of Spain were the property of the Crown, a vast number of edicts in their favour were issued during the different reigns. These edicts were collected and published in 1731, under the title of "Laws of the Royal Flocks." This work would doubtless throw much light on the condition and management of the flocks of fine-wool sheep at that period, and might possibly give a clue to the derivation of the word "merino." A pamphlet was published in England in 1811, on the name and origin of the merino sheep, which I have found casually noticed by several authors as containing some very interesting information, but this work, together with many others treating of the subject of this inquiry, is not within my reach.

Originally the greater portion of the merino flocks were the property of the Crown, but the exigencies of the State led to their gradual distribution among the wealthy nobles and ecclesiastical dignitaries of the country. The last of the royal flocks, containing 40,000 sheep, was sold by Philip I. to the Marquis of Iturbietta. Though in comparatively early times we hear of high prices being given by the Spanish nobles for superior rams, and efforts made to obtain superior sheep from Africa, yet, for some time before the distribution of the Spanish flocks, the sheep-owners appear to have followed the routine prescribed by ancient custom in a purely

* " *Connaissance General du Mouton.*"

mechanical manner. Beyond selecting the strongest rams for sires, I have not been able to find a record that they made any attempt during the 17th and 18th centuries to improve the breed. It is, perhaps, fortunate they did not make any such attempt, for had they done so, with their ignorance of the principles of breeding, they would, in all probability, have ruined the race by the introduction of some inferior foreign blood. Each cavaña, or flock, appears to have been regarded by them as a separate breed, and was not suffered to mingle with the others. The Paular, Negrette, and Escurial were considered the finest cavañas, the wool from which was not allowed to leave the kingdom, but was made up at the royal manufactory of Guardalaxora.*

Some curious and very interesting letters from a gentleman living in Spain were published in the *Gentleman's Magazine*, May and June, 1764, in which some particulars are given respecting the mode of treating the migratory flocks. He estimates the total returns per head of these sheep at 24 reals (about 6s.); of this sum 6d. per head clear went to the owner, 1s. 6d. per head went into the royal treasury, and the remainder was absorbed in pasture, tithes, dues, shepherds, dogs, salt, &c. (The writer in the *Annual Register*, 1809, gives the annual profit per sheep to the owner at 1s.) Each flock was composed of 10,000 sheep, which was divided into ten tribes. The whole flock was under the management of a head man, who had under him 50 shepherds and 50 dogs, the latter being a fierce kind of mastiff, used to protect the sheep against wolves and robbers. It appears that the wolves constantly hovered

* *Annual Register*, 1809.

about the flocks when on the road, with the view of picking up any stragglers. Respecting the periodical migrations, he makes the following curious statement:—"As soon as the month of April comes about, which is the time of their departure, the sheep express, by various uneasy motions, a remarkable restlessness and strong desire to go off. The shepherds must exert all their vigilance lest they should escape, and it has often happened that a tribe has stolen a forced march of three or four leagues upon a sleepy shepherd; but he is sure to find them, for they return exactly by the same way they came; and there are many examples of three or four stray sheep walking 100 leagues to the very place they fed on the year before." The shearing was performed while on the journey to the summer pastures, and, from his description, the shearing sheds must have been very extensive buildings. Some of them, he says, will contain 20,000 sheep, and cost about £5,000. He describes the method of shearing in the following way:—"A certain number (of sheep) are allowed to enter the shelter-house, which is a parallelogram of 400 or 500 feet long and 100 feet wide, where they remain all day. As many as they judge can be despatched by the shearers next day are driven from the shelter hall into a long narrow gut, which is called the sweating place, where they remain all night crowded as close together as the shepherd can keep them, that they may sweat plentifully, which, as they say, is to soften the wool for their shears, and oil their edges." This writer notices a peculiar feature in their management of the migrating flocks—namely, "The shepherds never let the sheep go out of their toils till the sun has exhaled the dew of a white frost, and

never let them approach a rivulet or pond after a shower of hail; for if they should eat dewy grass or drink hail water the whole tribe would become melancholy, fast, and die, which has often happened." He attributes the fineness of the merino wool to the fact that the flocks pass their lives in the open air, and, owing to their migrations, in an almost equal temperature, for, as he says—"It is not colder in Andalusia and Estremadura in the winter than it is in Montana and Molina in the summer, there being but little frost in the former districts in winter, while snow sometimes falls in the latter in June." He notices one custom which is well worthy the consideration of Australian sheep-farmers, namely—"On the return of the flocks to the summer pastures, the shepherds give them as much salt as they will eat, 25 quintals (of 100 lbs. each) being allowed to each thousand sheep. They eat none on their journey, nor in their winter walk. This has ever been the custom, and is the reason why the King of Spain cannot raise the price of salt to the height it is in France: for it would tempt the shepherds to stint the sheep, which, it is believed, would weaken their constitution and degrade the wool." He gives the average weight of a ram's fleece at $8\frac{1}{2}$ lbs., in the grease. The method adopted by the shepherds of rendering the lambs impotent was peculiar; they made no incision, but twisted the testicles round in the scrotum till the spermatic vessels were like a rope, and they withered away without danger. The sheep were enclosed every night in toils, to prevent them from straying and being killed by the wolves. These toils were made with esparto (a species of rush), the meshes being a foot wide, and the strands about as thick as one's finger.

M. de Laborde,* who travelled in Spain for several years about the end of the last century, and who took particular notice of the management of the migratory flocks, speaks with some authority on the subject, as he was himself the owner of a flock of merino sheep in France. He, however, falls into the error of attributing the origin of the merino breed of sheep to some fine English sheep introduced into Spain by Catherine of Lancaster, on her marriage with the hereditary Prince of Castile, in 1394. He was strongly opposed to the theory that the fineness of the Spanish merino sheep was owing to the practice of travelling the flocks. On this subject, he says:—"There are some districts where the flocks are stationary, and yet bear wool equally fine with that of the migratory flocks. Of this description are the flocks of some parts of Estremadura, in the environs of Segovia, and in some parts of Aragon. For three years I have been in possession of a large flock of Spanish sheep, which I selected and imported myself. The quality of the wool has not suffered the smallest deterioration since their abode in France, and the lambs have not degenerated." He gives the same number of sheep in a flock as that stated by the writer in the *Gentleman's Magazine*, already quoted, together with the same number of shepherds and dogs. He quotes the wages as follows:—Master shepherds, £38 8s. per annum, with a horse to ride; under him, 50 shepherds and 50 dogs (to manage 10,000 sheep)—first-class shepherds, £1 11s. 3d. per month; second do., £1 0s. 11d.; third, 12s. 10d.; and fourth, 8s. 4d. per month. On each journey the shepherds received the sum of 2s. 6d. each for travelling expenses.

* "A View of Spain."

Their rations were 2 lbs. of bread per day, and they were allowed to keep a few sheep and goats in the flock for their milk and flesh, but the wool belonged to the proprietor. The dogs also received a ration of 2 lbs. of bread each per day. The shepherds seldom married, and, notwithstanding their life of exposure, lived to a hale old age. Of the shearing, he says:—"The shearing is preceded by a pompous preparation, conducted in due form, and the event is considered a time of feasting and recreation; 125 men are usually employed to shear 1,000 ewes, and 200 for 1,000 wethers. Three wethers' fleeces will weigh 25 lbs., equal to five ewes." The migratory flocks passed the winter in the temperate climate of La Mancha, Estremadura, Murcia, Granada, and Andalusia; starting for the mountains of Leon, Old Castile, and Aragon in April and May, where they remained till October, when they commenced the return journey for their winter quarters. The distance between the summer and winter walks ranged from 330 to 390 miles, and the time taken on the road was from 30 to 35 days. Respecting these journeys, Laborde says:—"The journey which the flocks make in their peregrinations is regulated by particular laws and immemorial customs. The sheep pass unmolested over the pastures belonging to the villages and commons which lie in their route, and have the right to feed on them. They are not allowed to pass over cultivated lands, but the proprietors are obliged to leave a path of 84 yards in breadth. In the grass land the flocks seldom travel more than $5\frac{1}{2}$ miles a day, but when they are driven through the cultivated lands they sometimes travel 17 miles a day."

The author of "*Nouveau Voyage en Espagne*," who spent several years in Spain about the same time as Laborde visited it, states that the wool of a cavaña of 10,000 sheep was worth 50,000 francs, which would pay all expenses and leave a handsome profit. He notices the restlessness of the sheep when the time arrived for them to take the road, and says:—"If the shepherd forgot the time, the actions of the sheep would serve for a calendar." To his surprise he found a cloth manufactory at Guardalaxora, and states that some very fine scarlet cloth made there did not exceed in price the fine cloth made in France, the wool for making which was imported from Spain.

In connection with the migratory flocks of Spain there was formed one of the most powerful and gigantic monopolies ever known in Europe, which, under the name of the "*Mesta*" (or council for the management of the travelling flocks) eventually usurped nearly the whole of the pasture lands of the country, to the great detriment of the agriculturists, and in the end to the detriment of the sheep-owners also. According to Laborde, this combination originated in 1566, when the mountaineers formed a close coalition with the landed proprietors in the lowlands for their mutual protection and advancement. He remarks:—"The origin of this custom must be referred to the era when the great plague ravaged Spain and destroyed two-thirds of the population, and the few persons who survived took possession of the lands which had been vacated by the death of the former occupants." In an account of this plague given by Martinez de Leyva, he describes the land as lying waste, and the villages empty, for a century after.

The origin of the Mesta, however, must have been long before the date fixed by Laborde, for Irving mentions that the Mesta engaged the attention of Government, and became the object of legislation, as early as 1273, under Alphonso the Wise.

The immense privileges conferred on the Mesta became at last very oppressive. The landowner was not permitted to break up his pastoral land for cultivation even if he wished to do so. He was not allowed to choose his own tenants, and had no voice in fixing the rent. Once land was laid down in pasture it was never permitted to be cultivated again. The cultivated lands along the route taken by the migratory flocks were subject to continual trespass, which was committed with impunity, as the proprietors appealed in vain for redress. Owing to the season of the year when the migrations took place, great damage was committed by these trespassers. When the sheep passed on their way to the mountains the corn was well advanced in growth, and they returned when the vines were loaded with grapes. The directors and shepherds were dreaded in every place through which they passed, on account of the insupportable despotism which they exercised. They had the privilege of bringing anyone with whom they had a dispute before the council of the Mesta, whose decisions were invariably favourable to their servants. The vexations and obstacles thus thrown in the way of the cultivation of the country caused forcible protestations to be made for redress to the estates of the realm, and frequent petitions were made to the Crown for the suppression of the Mesta. After long supplication, a committee of inquiry was appointed to report on the matter; but

though this committee remained in existence for over thirty years, so great was the power of this institution that nothing was done.

The laws of the Mesta were almost as oppressive to the owner of the sheep as to the agriculturist, as the following extracts from the *Annual Register*, 1809, will show:—"It is scarcely credible, though it appears on the best authority to be true, that under the provisions of the Mesta, which confide the care of the sheep to the management of the shepherds, without admitting any interference on the part of the proprietor, no profit of the flock comes to the hands of the owner except what is derived from the wool; the carcasses and culled sheep are consumed by the shepherds, and it does not appear that any account is rendered by them to their employers of the value of the skins, tallow, &c." The same writer makes the following remarks on the strictness of the regulations respecting the roads taken by the travelling sheep:—"So careful is the police of the country to preserve them during their journeys from all hazard of interruption, that no foot passenger is suffered to travel upon those roads while the sheep are in motion unless he belongs to the flock."

The Spaniards used six and seven rams for each 100 ewes, and the rams were kept at the stud till they were seven and eight years old. Beyond the fact noticed by Laborde, that the strongest and handsomest rams were chosen for sires, they seem to have made no attempt to improve the sheep by selection; and I hear of no culling of the breeding ewes. The hard life the sheep led would, however, naturally weed out all animals of weak constitution; and we are informed that, in bad years, there

was often a great loss in the young stock. It was the custom of the shepherds, in severe seasons, to kill a great many of the ram lambs, and give the ewe lambs the milk of two mothers. The Spaniards did not attempt to interfere with the immemorial customs of the country, and perhaps it is fortunate they did not, for their system had this good effect—it preserved the noble breed of the merino sheep in the same purity as they received it from the Arabs. Their management was calculated to produce a great uniformity in the flocks, and such appears to have been the case from the following remarks made by Dr. Randall:—"Some intelligent observer of them in Spain, 50 or 60 years ago, whose name I do not remember, said that in every 100 there were 10 rather better and 10 rather worse ones, but that the other 80 could hardly be distinguished one from another." The same management of the flocks was continued till the period of the Peninsular war, when the best flocks of Spain were sold or destroyed. Previous to this, however, large drafts from the finest flocks had been obtained by the principal European States, and many shipments had been made to America. After the Peninsular war, the Spanish sheep were found to be so much degraded by neglect and mismanagement as to be almost worthless. A letter written by Mr. J. Taintor, which is quoted by Dr. Randall, contains the following remarks:—"You are aware that the Spanish merinos have become almost lost. They are so small, neglected, and miserable that I would not take one of them even as a present."

Thus, after a glorious existence of over 25 centuries, the Spanish sheep were known no longer in that country; but, though lost to Spain, they were not lost to the world.

Henceforth, it is in other countries than Spain we must trace the history and progress of the merino breed of sheep, and in that history I feel convinced that Australia is destined to take a leading position among the wool-producing countries of the world. It is under the bright Australian skies, and in the finest and most extensive pasture land in the world, that this grand breed of sheep will attain its highest development. In closing this portion of my sketch, I cannot but express regret that the information respecting the merino flocks while in the hands of the Spaniards is so meagre. They completely neglected husbandry ; and in all the books I have consulted I have not met with a single reference to any work on agriculture written in the Spanish language. Their neglect of all matters relating to the history and progress of the nation was so great that Mr. Henry Buckle, in alluding to the difficulty he experienced in collecting materials respecting the condition of the country, states that the history of Spain in the 17th century was never written.* I am mainly indebted to the works of a few intelligent Frenchmen for the information I have been able to gather respecting the management of the merino flocks by the Spaniards.

Of late the Spaniards have made some attempts to revive the fame of their fine-wool sheep ; but the quality of their sheep was so low that, in order to establish an improvement, it was necessary to import merinos from Germany and France. The process has evidently been a slow and difficult one ; but a certain measure of success has attended the effort, for we read in the report of the Universal Exhibition of Paris, 1855, that a medal of the

* "History of Civilization."

first class was awarded to the wool from the flocks of H.M. the Queen of Spain. Coupled with the award is the following remark :—" Whose flock has been improved by rams from Germany."

From what has preceded, the reader will naturally infer that I am of opinion that the merino breed of sheep is the direct descendant of the fine-wool sheep of ancient times. We find it first in the possession of the Phœnicians, though there are evidences that such a breed existed previously in Mesopotamia. The Phœnicians introduced it into the neighbouring countries of Asia Minor, and eventually into Greece. It was successfully cultivated by the Greeks, and was taken by them to Italy, when they planted colonies in the southern portion of that country. The Phœnicians introduced the fine-wool sheep into Africa and Spain, and in the latter country it appears to have succeeded admirably from the first. In spite of devastating wars, and the conquest of the country by foreign invaders, the merino sheep, owing, doubtless, to the manner in which they were reared, and the hardiness of their constitutions consequent thereon, remained, after 25 centuries, the only pure descendants of the fine-wool sheep of the ancient world.

The theories put forward to account for the existence of the merino breed of sheep by crossing fine-wool Tarentian ewes with wild rams from Africa, or by crossing the native Spanish sheep with English sheep, I consider hardly worth the trouble of noticing. Anyone with the slightest knowledge of sheep-breeding will at once admit the impossibility of such a breed as the merino being the result of either of the extreme crosses

mentioned. The fine-wool sheep of Spain existed many centuries before either of the occurrences took place which are said to have established the breed. I can imagine the opinion an Australian stud sheep owner would entertain of the sanity of that person who would recommend him to cross his beautiful stud merino ewes with a wild Barbary ram or an English long-woolled sheep, by way of effecting an improvement in his stock.

In the earliest records of Spain we occasionally hear of a coarse-woolled sheep, of very inferior quality, in that country. The great superiority of the English sheep—then, as now, the finest animals of their kind in the world—naturally led to the desire on the part of the Spaniards to obtain some of those excellent sheep to improve their common sheep—the Chuna—one of the most worthless animals in Europe. That a breed of these English sheep was not established we cannot feel surprised when we consider the difficulty M. Malignie Nouel experienced in establishing a breed of long-woolled sheep in France, an account of which will be found in another portion of this work.

Though the merino is the most celebrated fine-wool sheep in the world, it is not the only race which yields a fleece of fine wool, as distinguished from the coarse-woolled or hairy sheep. Travellers in the East often speak of flocks of sheep bearing fleeces of extremely fine wool, but they do not, as a rule, possess any knowledge of the subject, and the remarks made are, consequently, of a very vague nature. The sheep of Asia Minor, which bear fine wool, are, doubtless, descendants of the ancient fine-wool sheep of which I have endeavoured to trace the history. Farther east, however, we

hear of sheep which bear a different character, and of which we know but little more than that they exist. In a book of travel, published within the last few years,* the sheep of Karman are said to possess the only wool capable of being used to adulterate or represent the wool of the Cashmere goat. The writers of this work supposed that some quality in the water gave a brilliancy to the colouring of the wool, unattainable elsewhere. In the same work I find the following remarks, regarding these sheep, by Major St. John:—"We saw on one occasion immense numbers of sheep being driven up to their summer pastures. They are much smaller than the sheep of Western Persia, and mostly white, the rarest colour elsewhere. Their wool is, perhaps, equal to any in the world, large quantities being exported to India for mixing with the down of the Cashmere goat, or, perhaps, for using alone in the manufacture of the coarser kinds of shawl. Their meat is remarkably fat and well flavoured, even for Persia, the land of good mutton." In Yarkand there exists a fine-wool breed of sheep which are evidently of a different character. They are described in the following terms by Messrs. Henderson and Hume†:—"The sheep we saw were of a remarkably fine breed. They are usually without horns or have very short ones. Most of them are white, with chestnut faces, and all have a slightly enlarged tail. The ears of both sheep and cattle, and I think of the goats also, are short and erect, not long and pendulous, as in the Indian breeds. The wool of the sheep is long and fine, which is remarkable in such a dry climate."

* "Eastern Persia," by Majors St. John, Lovel, and Smith.

† "Lahore to Yarkand."

In the remaining portion of this division I purpose tracing the migrations of the merino sheep after the dispersion of the Spanish flocks. From her proximity to Spain, it would be naturally concluded that France would be the first country to see the advantages of the merino sheep, and to obtain possession of the breed. But this does not seem to have been the case. France certainly was possessed of a kindred breed of sheep at a very early period. This race—the Roussillon—was originally bred in that part of France which at one time was under the rule of Spain. It was common in Narbonne and Languedoc, and was by many sheep-farmers preferred to the pure merino, from which it was evidently descended. Several importations of merinos were made from time to time, principally with the object of crossing with the Roussillon breed. It was not, however, till 1767, that a systematic attempt was made to establish the merino in France as a separate breed of sheep. In that year M. Daubenton commenced his experiments in sheep-breeding, with the view of effecting an improvement in the quality of the French wools. He appears to have set about making the experiment in a most comprehensive manner. Six different breeds of sheep were chosen—viz., from Roussillon, Flanders, England, Morocco, Thibet, and afterwards from Spain. Sheep of these six countries were brought together at Montbard, where the soil is dry and the herbage thin and fine, qualities which were considered requisite for breeding fine-wool sheep. Each breed was kept pure, so as to effect an improvement by means of selection, and at the same time crosses were made with the native sheep to ascertain in what way they could be best improved.

In these experiments the Roussillon sheep improved greatly, and were by many considered to rival, in point of quality of wool, the merino itself. Though no fresh blood was introduced from Spain, the merino sheep maintained their high qualities up till 1800. The first cloth made with French wool that was considered equal in point of fineness to cloth made with Spanish wool came from this flock. M. Turgot, Intendant of Finance to Louis XVI., at whose instance M. Daubenton had commenced his experiments, was much struck with the result, and at his request the King obtained a small lot of sheep from the King of Spain in 1776. These sheep, numbering 200, were selected from the finest cavañas of Leon and Segovia. On their arrival in France, they were distributed among M. Daubenton, M. de Brabançois, and other sheep-breeders. In 1786, the King of Spain presented Louis XVI. with another small flock of 364 merinos, selected from the finest flocks in Spain: but, owing to disease, they were greatly reduced before they arrived in France. They were placed on the domain of Rambouillet, which the King had obtained from the Duc de Penthièvre. These sheep, numbering in all 269, were the origin of the famous imperial merino flock of Rambouillet. The object sought in establishing this stud flock was to breed from the merino an animal that would be adopted by the sheep-farmers of France, and to induce them, by means of the acclimatized Spanish merino, to improve the native sheep of the country.

- In 1799, M. Gilbert, Director of the School of Alfort, acting on behalf of the Government, imported 1,000 merinos into France, and in the years 1802-3 further importations were made, amounting in all to 3,000 sheep.

These importations continued up till 1811, after which no more Spanish merinos were brought into France. The Government established stud farms all over the country, for the purpose of breeding merino sheep, no less than sixty of these establishments having been formed. The Rambouillet stud farm, however, was the only one that attained a decided success. It was currently reported that the Rambouillet sheep had been all destroyed during the Franco-Prussian war; but this appears to have been an exaggeration, for several sheep from this celebrated flock were sent by the French Government to the Intercolonial Exhibition at Sydney in 1880, and, to judge by the reports of experts, they were quite equal, if not superior, in size of frame, weight of fleece, and quality of wool, to anything we have had hitherto from the Rambouillet flock. At the same show were also exhibited some sheep sent to Australia by M. Gilbert, of Videville, France. These sheep were descended from merinos brought from Spain by his grandfather in 1799. They were of very large frame and heavily woolled. The pure descendants of these sheep are now in the possession of Mr. R. G. Higgins, of Kickerbil, New South Wales.

Since the merino sheep were introduced into Germany the sheep-breeders of Saxony have always held the first rank as breeders of fine-wool sheep. Indeed, the country is said to have possessed a breed of fine-wool sheep before the introduction of the Spanish merinos. These sheep are believed to have been the descendants of the fine-wool sheep of the Romans, as the Ryelands are believed to be the English descendants of the fine-wool sheep of the Romans. From an extract taken from the

archives of the administration of the Saxon domains, I learn that the first flock of sheep brought from Spain arrived at Dresden on 31st July, 1765. It consisted of 92 rams and 128 ewes. They were a present from Charles III., King of Spain, to Prince Xavier, Administrator of the Electorate, during the minority of the Elector Friedrich August of Saxony. The high quality that has ever distinguished the Saxon merinos has been attributed to the excellence of these sheep. The merinos were taken to the domain of Rennersdorf, whence the finest animals were afterwards taken to the domain of Lohmen. Some were distributed among the most considerable manors of Saxony.

The success which attended the introduction of merino sheep into Saxony led to the introduction of a second lot of Spanish merinos in 1788. They consisted of 100 rams and 200 ewes, but were never considered equal to the first importation. From the outset the greatest care was exhibited by the Saxon sheep-farmers in the management of their merino flocks. No trouble or expense was considered too great to obtain the finest stud sires, while the culling of the breeding flocks was of the most severe description. It is probable that the fame of the Saxon merinos is due almost as much to the care and skill of the flock-masters as to the excellence of the original animals brought from Spain.

The name "Eseurial" has been given to some of the Saxon flocks from a fancied resemblance the sheep bore to the Spanish cavaña of that name, but, so far as I can learn, the sheep imported from Spain to Saxony were almost exclusively drawn from the flock of Count Negrette. Only a few ewes and no rams were obtained

from the Escorial flock. All the modifications of the Spanish merino in Saxony were distinguished by different names; but the whole may be reduced into two great divisions—namely, the Infantados, bearing strong wool, and the Electoral, bearing fine, soft wool. The royal flock of Lohmen was considered to be at the head of all the Saxon merinos for quality and beauty of wool. It was derived from the finest specimens of Spanish merinos, imported in 1766 by Prince Xavier, and the purity of its blood has always been most carefully guarded.

The mode of culture adopted in Saxony developed to the utmost the fine quality and beauty of the wool, but the housing and pampering to which the sheep were subjected had the effect of rapidly degenerating the hardy Spanish merino into a weak and puny race. We have seen the same causes lead to the same results, in ancient times, in Italy and the East, though in Saxony the degeneracy did not extend so far as in the instances referred to. Notwithstanding their delicacy, and other objections, resulting from too much pampering, the Saxon merinos were extremely attractive, and it is easy to understand the favour with which they were received by those who admire high quality and beauty of wool. Dr. Randall, no lover of a delicate sheep, and an ardent admirer of the hardy Spanish merino, is constrained to say of the Saxons* :—"But there was an atoning beauty about the wool of the Saxon which it was hard to resist; it flashed with such a gem-like lustre; it was so beautifully fine and even, and had such an exquisite downiness of touch, that all other wools seemed base by the side of

* "Fine-wool Husbandry."

it." Of late the Saxon sheep-breeders have directed their attention to producing a more robust type of sheep, having wool equal in length of staple, quality, density, and evenness to the finest specimens of the Tasmanian merinos. The fleeces of merino wool shown by Herr Otto Steiger, of Leutewitz, at the Melbourne Centennial Exhibition, 1888, were the admiration of all the sheep-breeders who saw them. •

Prussia followed the lead taken by Saxony in obtaining the breed of merino sheep. Mr. von Vinke, near Hallé, introduced Saxon merinos into Prussia in 1768, and ten years afterwards he obtained pure merinos from Spain. In 1776, Frederick the Great imported 100 rams and 200 ewes from Spain, but as the greater number of them died, M. Vinke was commissioned to make a second purchase, and 1,000 Spanish sheep were imported by him from Spain. Count Eckersdorf received from Frederick the Great a Spanish ram, and in 1801 Count Hangwitz obtained from William III. of Prussia the best ram and a few ewes from a small flock imported direct from Spain. Prussian Silesia possessed a breed of sheep, before the introduction of the merino, which yielded a fleece of excellent quality, and which always realized a much higher price than the wool of the neighbouring countries.* This breed of sheep was regarded as a very ancient one, and is by some believed to have been descended from fine-wool sheep introduced by the Romans.

Merinos were introduced into Austria by Maria Theresa, who imported 300 Spanish merinos into Hungary, with which she established a stud flock at the Imperial farm at Meropail. Other importations followed,

* Southey's "Sheep and Wool."

and they thrive so well, and became so generally fancied, that at the present day nearly all the Hungarian sheep are either pure merinos or possess a very large infusion of merino blood.

Sweden, which, from its climate and position, one would imagine would be the least likely of all European nations to attempt the rearing of merino sheep, was the first to possess a flock and to attempt their culture as a separate breed. In 1723, M. Alstromer, a spirited and patriotic Swedish gentleman, imported a small flock of pure merinos into the country. The experiment succeeded well, and after the lapse of more than a century it was found that the Swedish merinos produced wool nearly as fine and soft as their Spanish ancestors. A very large proportion of the Swedish sheep are now merinos.

The earliest mention I have found of an importation of merino sheep into England is in the 15th century, when Edward IV., with the permission of the King of Spain, imported 3,000 sheep from Spain. It is said that sheep farms were established with these sheep, and that they were kept up till the reign of Queen Elizabeth without exhibiting any degeneracy.* Of this importation I have only found the one reference. Occasional mention is made by early English writers of a black or spotted breed of Spanish sheep, which appear to have been kept as curiosities in parks.

In 1787 George III. gave orders for the importation of some merino sheep for his own use. It was doubtful if the license of the King of Spain, without which these sheep could not be shipped from a Spanish port, would

*. "Dictionnaire d'Histoire Universelle."

be granted, consequently it was deemed advisable to make the purchase in those parts of Estremadura adjoining Portugal. After many difficulties and losses, the sheep arrived in England, and a small flock of merinos was established. It was found, however, that they were from different cavañas, and of inferior quality. King George then made an application to the King of Spain to be permitted to export a small flock of the best breed. This was granted; and, in 1791, a small lot of very choice Negrettes, consisting of 4 rams and 36 ewes, were presented to the King of England by the Marchioness del Campo di Alange, in return for which his Majesty presented the Marchioness with eight splendid coach horses.* The sheep arrived safe and well at Dover, and were placed on the royal farm at Kew. On the arrival of this flock, all the sheep of the first importation were disposed of. For some time the management of this flock was very indifferent, and the sheep suffered from the rot, but eventually the survivors became thoroughly acclimatized, and the quality of the wool did not deteriorate. During the five years, 1798-1802, these sheep yielded an average weight of $3\frac{1}{2}\frac{5}{4}\frac{3}{7}$ lbs. of brook-washed wool per head, and $2\frac{1}{2}\frac{5}{4}\frac{3}{7}$ lbs. per head of scoured wool, for manufacturing.† The first public sale of sheep from this flock was held in 1804, when 45 sheep were disposed of, the prices ranging from £6 7s. to £44 2s. each. Among the purchasers was Captain Macarthur, who bought eight sheep, which he sent out to his farm in New South Wales. Some delay in shipping these sheep was occasioned by the Custom House authorities, owing to an

* "Domesticated Animals," by D. Low.

† "Agriculture, Ancient and Modern," by Samuel Copeland.

ancient statute which made it a felony to export live sheep from Great Britain. In this case common sense prevailed over red tape and fiscal absurdity, and the sheep were put on board the ship *Argo*. In 1808 a flock of the finest merinos in Spain, numbering 2,000 sheep, was presented to the King of England. They were of the cavaña named Paular, one of the three finest flocks in Spain. The cavaña of Paular consisted of 36,000 sheep, and originally belonged to the rich Carthusian monastery of that name near Segovia. Soon after the Prince of Peace came into power he purchased the flock from the monks, with the land belonging to it, both in Estremadura and Leon, at a price equal to 16s. 8d. per head. The sheep presented to the King of England were from this flock ; and, to make the present more valuable, they were selected from eight subdivisions (of 1,000 each), in order to choose none but young, well-shaped, and fine-woolled sheep.

In 1811 a Merino Society was established in England, with Sir Joseph Banks for its president. The society was formed for the purpose of encouraging the breeding of merino sheep. One of its most distinguished members was Lord Western, whose stock was understood to be Saxon merinos, or crossed with that breed. Mr. Bennett, M.P., was one of the most extensive breeders of merino sheep in England. His flock was of pure Spanish blood, and at one time numbered 7,000, but was afterwards reduced to 3,500. In spite of the exertions of its president, 45 vice-presidents, and numerous branches, the Merino Society was only a temporary success. The cross between the merino and native English sheep was disappointing ; the progeny were of smaller size, less hardy

than their British parents, and of inferior form, disadvantages which the improvement in the wool did not counterbalance. The sheep-farmers soon discontinued breeding from the merino cross, and gradually the greater number of the pure merino flock were given up. Of the few pure flocks still in existence in England the principal one is the Dorrien flock, now the property of Mr. Sturgeon, of Gray's. Mr. Thomas Henty, before he brought his merino sheep to Australia, was the most famous breeder of high-class merinos in England.

The breed of Spanish merino sheep was introduced into Russia under rather curious circumstances. A French merchant, named M. Rouvier, having become bankrupt at Malaga, in 1802, resolved to try his fortune in Southern Russia. He embarked in a vessel bound for Sebastapol; and, in travelling over the steppes, was struck with the capabilities of the country for rearing merino sheep. He drew up a memorial for presentation to the Minister of the Interior, in which he described the condition of the merinos in Spain, and pointed out the immense advantage it would be to introduce the breed into the Crimea, where the pastures were unclaimed and unowned. He asked for 10,000 descatines of land, and the loan of 100,000 roubles, without interest. He offered to return to Spain and procure merino sheep, accompanied, if the Minister wished, by a Government official. He undertook to have 10,000 merino sheep on his land at the end of twelve years, and to have repaid one-half the sum lent him. The Government agreed to his terms, and he returned to Spain. He attempted to obtain the sheep through the intercession of the Russian Ambassador, but failed. He then addressed himself to the

Prince of Peace, but met with a decided refusal to allow him to export merino sheep out of the country. He left Madrid in despair, and was about to embark for the Crimea again, when he was accosted in a mysterious manner by an Hidalgo. After some conference, the Hidalgo offered to sell him 100 merino rams at a very high price. The terms were accepted, and the sheep smuggled on board ship at night. After several delays, he arrived in the Crimea with 80 rams alive. At the first port sighted, Rouvier wished to land his sheep, as he had a presentiment of evil. The captain yielded to his almost frantic solicitations, landed the sheep, and soon after leaving the port the vessel was struck by a sudden squall, and completely wrecked. With the rams he had, Rouvier crossed the sheep of the country, and four years afterwards he obtained an important addition of pure merinos from Saxony. He fully realized the promises he made to the Russian Government, and at his death left a large fortune to each of his three daughters. The climate of the Crimea is admirably suited to the rearing of merinos, but the extreme cold in the winter renders great care necessary on the part of the sheep-owners. The merino sheep of the Crimea have succeeded admirably, and their wool, for quality, density, and length of staple, is equal to that grown in any part of the world. Mr. Arthur Leake, an old and thoroughly experienced breeder of pure merinos in Tasmania, told me that he saw some merino fleeces in Paris which came from the Crimea, and to his mind they were the finest he had ever seen. The weight of wool was very much greater than anything he had seen in Australia, and they were fully equal in other respects to our best samples.

The first merinos imported into America were sent direct from Spain, by the Hon. W. Porter, in 1793. He gave them to a friend, Mr. Cargie, who, not realizing their value, killed them for mutton. Dr. Randall relates that this gentleman told the story against himself many years after, when purchasing a merino ram at auction for 1,000 dollars. In 1802 Colonel Humphries, the American Minister at the Court of Spain, sent a small shipment of merinos to America, of which 21 rams and 70 ewes were landed alive. Colonel Humphries seems to have long had in mind the importance of securing this valuable breed of sheep for his country. In a poem written by him, and published several years before, the following lines occur:—

“ Oh might my guidance from the downs of Spain
Lead a white flock across the Western main,
Fam'd like the bark that bore the Argonaut
Should be the vessel with the burden fraught.”

Colonel Humphries' flock was a great acquisition to the country, and from it are descended many of the most famous stud flocks in Connecticut. About the time of Colonel Humphries' importation, Mr. Livingstone sent two couples of merino sheep to his farm on the Hudson. In 1809 the Hon. Wm. Jarvis, then American Minister to the Court of Spain, shipped to America 200 merino sheep, which he purchased from the Mayoral of the Escorial cavaña. Mr. Jarvis claimed that these were the only sheep from the Escorial cavaña ever imported into America. His example encouraged others, and led to the American sheep-farmers securing a large share of the famous merino sheep of Spain. When, in 1809, the Spanish Junta confiscated and sold

the four cavañas—Paular, Negrette, Montarcos, and Acquienos—Mr. Jarvis purchased and sent to America 1,700 merinos, and during the years 1810 and 1811 there were nearly 16,000 merinos from the *transhumante* cavañas of Spain imported into America. These valuable animals were distributed by the Government throughout every State which it was thought would be likely to profit by their acquisition.

In 1828 what has been described as the “fine-wool cyclone” set in, and immense sums of money were expended in importing, at fancy prices, the delicate, house-fed merinos of Germany; but, after a trial of a very few years, the majority of the sheep-breeders of America returned to the more hardy Spanish merino (fortunately kept pure in the country), which was found to be not only of more robust constitution but much more profitable than the German merino.

The weight of fleece cut by the Spanish merinos when first taken to America is given at from $4\frac{1}{2}$ lbs. to 5 lbs. for ewes, and from 8 lbs. to $8\frac{1}{2}$ lbs. for rams, the wool being unwashed. As the merinos became acclimatized in America the weight of fleece increased. In 1807 Captain Humphries mentions a ram that cut 7 lbs. 5 ozs. of washed wool, which he says was worth $1\frac{1}{2}$ dols. per lb. in England. Consul Jarvis’s pure flock, from 1811 to 1826, averaged 4 lbs. of washed wool per sheep. After this time the fleeces of the American merinos increased greatly. The fleeces of three rams sent to the Paris Exhibition, 1878, yielded within half an oz. of 9 lbs. each of scoured wool. Very few American merinos were imported into Australia till within the last few years, when they suddenly came into fashion. They have

nicked well with some Australian flocks that were deficient in density. In quality, brightness, and softness of wool they are, in my opinion, inferior to the best specimens of the Australian merino, and though they cut enormously heavy fleeces of greasy wool, they have not yet shown any marked superiority over our finest merinos in the weight of scoured wool, while the value of Australian merino wool is considerably higher than that of American merino wool.

The introduction of the merino sheep into the Cape of Good Hope, and their subsequent treatment in that country, is a matter of considerable interest to Australian sheep-farmers, as it was from the Cape we obtained our first pure merino sheep. Unfortunately, the accounts of the introduction of the merino sheep into the Cape are extremely meagre. The sheep were sent to that colony when it was in the possession of the Dutch, and in the stirring times of the early days of the colony the importation of a few sheep was not regarded as an important matter. Mr. W. Robinson, a special commissioner for the Crown colonies at the Vienna Exhibition of 1873, says* :—"An attempt to introduce fine-wool sheep into the Cape Colony was commenced by the Dutch Government in 1724, but failed. In 1793 a few merino rams were secured by the Van Reenans. . . . But it was not until the year 1812, when Mr. Reitz (who, in 1817, was joined by Mr. Michael Breda) commenced sheep-breeding, that any successful attempt was made in the direction of wool-growing. It appears that these two gentlemen introduced a few Saxony rams and ewes, and commenced

* "Report on the British Colonies represented at the Vienna Exhibition, 1873."

on a small scale that system of sheep-farming which has ever since proved one of the chief sources of wealth to the colony." It will be seen in Captain Waterhouse's letter to Sir Joseph Banks, which will be found in the article on the introduction of merinos into Australia, that he was of opinion that Colonel Gordon imported pure merinos from Spain to the Cape. I have made persistent inquiries, both at the Cape and in Holland, as to the importation of merinos to the Cape by the Government or private individuals, but the results have been very unsatisfactory. Mr. Southey, whose knowledge of merino wool and sheep renders him a valuable authority on the subject, makes the following remarks respecting the importation of Spanish merinos into the Cape* :—"When the value of the merino sheep began to be acknowledged in Europe, and the breeding of them became so fashionable in Germany, the capabilities of South Africa were thought of, and at the instigation of the Dutch Government, and in accordance with the wishes of persons interested in the development of colonial resources, a few specimens of the Spanish breed were sent on to the Cape." Unfortunately, he does not give his authority for this statement, nor the date of the shipment. Of the treatment of the merinos after they were received in the colony he says nothing, but from some incidental remarks the reader is led to believe that they were kept pure. He gives the following quotation from a work by Mr. Michael Breda, a native of the Cape, but of Dutch origin, which indicates that the merino sheep were highly thought of. Mr. Breda says :—"In 1817, I bought a place in the district of Swellendam

* Southey's "Colonial Sheep and Wool."

and added to the sheep three rams and three ewes, bred at Port Groote from real merino sheep, the cost of which was 300 rixdollars." In another portion of Mr. Southey's work, he mentions an incident which proves that merino sheep, yielding a very high quality of wool, were bred at the Cape. He says:—"Soon after I returned to England, I received a note from the late Earl of Sheffield, containing a sample of wool, which his lordship assured me he had received from Lord Charles Somerset, at that time Governor of the Cape, with a request that I would offer an opinion on its quality. After inspection, I returned for answer that the wool in question was the produce of merino sheep, and equal in quality to any I had ever seen." The first merino sheep imported into New South Wales were from a flock kept by Colonel Gordon, who had been in the service of the Dutch. I endeavoured to get some information respecting this gentleman, but could obtain nothing relating to the object of my inquiry. My sister, who resided for some time at the Cape, made inquiries on my behalf, but the result was not very encouraging. A gentleman residing in the Cape Colony makes the following reply to my questions:—"I have made all the inquiries in my power respecting the sheep, and all I can glean is that some thoroughbred merinos were imported here from Spain by the Dutch Government, and were sent to farmers in the country to breed from, but no farmer, under a severe penalty, was allowed to kill any of them. This seemed such an arbitrary law—that a man may not do what he will with his own—that all interest in the matter died. Colonel Gordon's name is familiar in the colony, and it is highly probable that he sold some for exportation to Australia.

Once since then some sheep (merinos) were imported from King George IV.'s own flock by Lord Charles Somerset, who was then Governor." Colonel Gordon, from whose flock the first merinos brought to Australia were obtained, died before 1797.

We have traced the dispersion of the merino sheep from Spain over Europe, into America, and to Southern Africa; and, as we have seen, in every country where they have been introduced they have invariably proved a source of wealth to the inhabitants. In the following division of my work I will give an account of the introduction of the "golden-footed" merino into Australia, than which no country in the world has derived greater advantage from this ancient and noble breed of sheep.

THE INTRODUCTION OF THE MERINO INTO AUSTRALIA.

PURE merino sheep were introduced into the parent colony of Australia towards the end of the last century, when a small shipment of very high-class sheep arrived in Sydney from the Cape of Good Hope. No shipments of pure merinos were made direct from Spain when the flocks of that country were distributed. Australia had no influential representative to look after her interest—indeed, at the time, it was even doubted if sheep could live on the herbage that has since produced the finest wool-bearing sheep in the world. It was entirely owing to the enterprise of a few individuals that the little lot of merinos were brought from the Cape Colony to Sydney in 1797. Capt. Macarthur had the foresight to appreciate the great advantages to be derived from establishing the pure merino in Australia, and through good and evil report he never ceased to maintain the fitness of the Australian climate and pasture for rearing the merino sheep in perfection. He was a staunch advocate for purity of blood, and we have the descendants of his flock still in Australia with pedigrees untarnished by a single cross of inferior blood. For nearly 100 years these sheep have had only one infusion

of outside blood, and that was a few sheep from the Royal Merino Flock at Kew in 1804.

Capt. Macarthur has been credited with having introduced the merino into Australia, but this is not so, as the following correspondence will show. Capt. Macarthur saw the fitness of the climate for rearing merino sheep, and it was probably owing to his energy and example that the first lot of pure merinos were not mingled with the worthless sheep then bred in New South Wales. I am indebted to Mr. J. J. Shillinglaw for copies of the following letters, written by Sir Joseph Banks and Capt. Waterhouse, relative to the introduction of pure merinos into Australia :—

From Sir Joseph Banks to Capt. H. Waterhouse.

“ SOHO SQUARE, 8th July, 1806.

“ DEAR SIR,—I much wish to procure accurate information respecting the introduction of the Spanish breed of sheep at Port Jackson, from which so much is expected; and some good will, I have no doubt, be in time realized. From Capt. Kent I have heard that there were 26 in all at the Cape, the produce of four ewes and two rams imported from Spain by Gordon; that you and he joined in the purchase of them, giving £4 a piece, and each took 13 on board your respective vessels; that you were successful, and brought the most of yours to Sydney, but that the most of his died on the passage; that he sold one ram to Capt. Macarthur for £16, and that the Captain bought two more off Lieut. Braithwaite. Will you be so good as to recollect, as well as you can, whether Capt. Kent’s memory is

correct, and also inform me in what manner you disposed of the sheep you brought with you, which were, I understand, more numerous than those of Capt. Kent? I shall be thankful to you for any particulars or anecdotes respecting Spanish or half-bred sheep in the colony; chiefly respecting the persons into whose hands they fell, and in whose hands they, or any of them, are likely to be at present.—I am, Sir, your obedient and faithful servant,

(Signed) "JOS. BANKS."

The following draft, or copy of the reply, is written on the back of Sir Joseph's letter :—

"SIR,—Having hurt my hand on the way down here is the reason I have not answered yours sooner respecting the Spanish sheep. In 1797 I arrived at the Cape of Good Hope, together with the *Supply* (Capt. Kent) and *Britannia*, transport. On board the *Reliance* was the Commissary for the purpose of purchasing cattle for the colony; and, on board the *Britannia*, Governor King and Col. Paterson on their way to England, both of which gentlemen had been acquainted with Col. Gordon, who had lately lost his life. Col. G. (Gordon) had imported a few Spanish sheep into the Cape, which had increased to 32. Mrs. Gordon was then going to Europe, and, for some reason, did not choose to leave anything that had belonged to her late husband at the Cape. She gave three Spanish sheep to Gov. King, and three to Col. P. (Paterson); the remainder, I understood, were offered to the Commissary, but he declined to purchase them on the part of the Government. They were then offered to me. As I could not afford to purchase the whole, Capt.

Kent, that they might not be lost to the colony, offered to take half. We each received 13, and I took Gov. King's on board the *Reliance*. Col. P. took his to England, I understood, as a present to Sir J. Sinclair. We paid Mrs. G. £4 or four guineas apiece for them; the expenses on delivery were about £1 a head more. The expenses for food on the passage were very considerable. Unfortunately Governor King's three had been brought to Cape Town before ours, and put with some others, by which they became diseased, and communicated it to ours. Those three died soon after they came on board. I do not recollect the number I had alive on my arrival, but I think more than half. Capt. K., who had shared, I understood, his with Lieut. B. (Braithwaite), I believe lost all his, from the circumstance of his applying to me for one immediately on my arrival. I do not recollect if Lieut. B. had one or two alive. I offered all mine to the Governor; but I suppose he was satisfied that they were in the colony, as he declined purchasing them. Capt. M. (Macarthur) then offered me fifteen guineas a head, if I would let him have the whole; this I declined, wishing to distribute them. I supplied Capt. Kent, Capt. M. (Macarthur), Mr. Marsden, and Mr. Laycock, as the Spanish ewes had lambs (none but Spanish rams running with them). I supplied Mr. Williamson, Capt. Rowley, Mr. Moore, Governor, and, in fact, any person who wished to have them. I never had any other than Spanish rams with my flock; and, on my quitting the colony, I sold the flock to Mr. Cox, the paymaster, with the exception of a few to Capt. M. (Macarthur). Most persons who had Spanish sheep were particular about them, and I can assert that several of the Spanish sheep

I originally brought from the Cape, together with their produce, were in the flock I left behind. I apprehend that the real Spanish breed is in the hands of most of those who turned their minds to raising sheep. I am not a judge of wool, but understand, from some who pretend to understand it, that a Cape or Irish ewe crossed by a Spanish ram, and their produce again crossed by the Spanish ram, the wool is very little inferior to the Spanish; but I forgot you have received the different fleeces of the crossbred. Major Johnson carried out a Spanish ram from England, presented by the Duke of Northumberland."

Encouraged by the example set by Capt. Macarthur, a few of those who obtained merinos of the first shipment kept their sheep pure, and their descendants are among the most famous flocks in the Mudgee district at the present day. The descendants of the sheep purchased from Capt. Kent by Mr. Wm. Cox, paymaster of the 102nd Regiment, are still in the possession of his grandson, Mr. G. N. Cox, of Burrundulla, New South Wales. A correspondence was published in the *Economist* of 27th July, 1866, between a Victorian colonist (who, I believe, was Mr. Thomas Learmonth, of Ercildoune) and Sir Wm. Macarthur (a son of Capt. Macarthur), relative to the breeding of the Camden flock. The following extracts from this correspondence will serve to show how carefully the sheep were bred. Sir William says:—"The originals and (as we believe) the finest woolled merinos were imported from the Cape in 1797. My father was not the sole recipient of the little flock; it was distributed among six or seven individuals.

. . . . In 1804 my father purchased, at the annual sale of George III.'s merinos at Kew, several ewes and rams. These he successfully introduced. I have always understood them to have been of a somewhat different type from the originals, with more dew-lap and darker fleeces on the outside, very close woolled, and less fine. There was never any other than the blood of these two lots of sheep in our stud flock. Several experiments were made in after years with the view to correct a special defect caused by local circumstances, but a sheep of German blood was never used." The experiments made did not prove satisfactory, and all the introduced animals and their progeny were mingled with the general flock.

Sir Wm. Macarthur gives the following description of the management of the stud :—" In 1825 each individual member of this flock received a permanent distinctive number, to correspond with a minute description in a large folio register. By dint of constant practice, I had by this time acquired a keen perception of every shade of quality in fine-woolled fleeces ; and each successive spring I made a careful examination of every animal, recording the result opposite its number in the register for the year. This document stated the parentage on both sides, weight of clean-washed fleece, quality, length, and character of every portion, with the form, size, and apparent constitution of every animal ; adding such other remarks as the most minute examination might suggest with reference to the fleece, outside or inside, on the sheep. Two columns were left blank—one for the number of the stallion, the other for that of the progeny. Bear in mind that the wool of this flock, since it had

reached the London markets, had produced from 4s. to 7s. 6d. per lb., and, on one occasion, 10s. 4d. at auction.* I continued this practice in later times, with less minuteness I admit, for nearly thirty years; so that, up to the time of parting with the flock, I could follow the pedigree of every individual up to 1825, and, in many instances, by tradition, much further back. During the entire period there never was known among them infectious disease of any sort—no scab, catarrh, Cumberland disease, fluke, &c. Moreover, I never knew a fluke to be produced upon this run, which was always perfectly healthy for the animals, however unfit it gradually became for a stud flock of fine-woolled sheep on account of the damage to their fleeces.”

It will seem strange to Australian sheep-farmers of the present day that there should have been any difficulty experienced in the way of establishing the merino breed of sheep in these colonies, and yet it was so. For many years the early colonists regarded the merino sheep with dislike. They were considered to be much less hardy than the hairy sheep from India and the Cape of Good Hope, which bred twice a year, and usually produced from two to three lambs at a birth. This was a strong recommendation in a country where mutton was worth 2s. per lb. Wool was valueless, and, as one of the early Governors remarked to Commissioner Bigge, “People could not eat wool.” It took fully twenty years before the prejudice of the colonists was overcome, and

* Mr. T. Elsworth, a wool broker, examined before a Committee of the House of Lords on the state of the British wool trade, June, 1828, stated that Mr. Macarthur's wool had improved to such a degree that a portion of it made the finest cloths that had ever been seen in England.

the manufacturers of England were convinced that merino wool of the highest quality could be grown in Australia.

Among the early importers of pure merino sheep to Australia, the Van Diemen's Land Company certainly take the highest stand. This company was formed to relieve Great Britain from dependence on foreign wool, and to improve the quality of Australian flocks. The scheme of the company was carried out on a grand scale; no expense was spared in securing the finest stock for importation, though the shareholders were fully aware that they would have to wait for many years before they could expect any return whatever for their outlay. The company was formed, as near as I can learn, in 1825. Mr. Ed. Curr, who was in London at the time, having just returned from Tasmania, was asked to assist the directory with his advice. He did so; and having, from his own experience, become acquainted with the wool-growing qualities of the island, he strongly urged the company to invest largely in pure merino sheep, and it was on his representations that the importation and breeding of high-class merino sheep was carried on, at the company's estate at Circular Head, on so grand a scale. It is difficult to over-estimate the value of these early importations; and, in my opinion, the Australian colonies are mainly indebted to Mr. Curr, and through him to the Van Diemen's Land Company, for the great success that has attended the breeding of merino sheep in Australia. As a sample of the scale on which the operations of the company were carried out, Mr. J. West mentions, in his "*History of Tasmania*," that, up to 1830, the company had spent £30,000 in the purchase of sheep.

The greater portion of this money was expended in the importation of pure merinos.

For the following particulars as to the importation of pure sheep I am indebted to the courtesy of Mr. J. W. Morton Smith, the present manager of the company, who took much pains in hunting through the old records of the company for me. The first shipment of sheep of which we have any notice was made in 1826, in the ship *Tranmere*, when 10 rams and 40 ewes, pure Cotswolds, were imported. No mention is made of merino sheep, but it is believed merino sheep were imported in that year. In 1827 the ship *Caroline* brought out 103 rams and 161 ewes, Saxon merinos. The price of these sheep is given as £14 19s. 6d. per head. In December, 1828, the *Timandra* brought out 13 rams and 359 ewes, Saxon merinos. The cost of these sheep was £15 12s. 8d. per head. The same month the *Lady Rouena* brought out 14 rams and 291 ewes, Saxon merinos; the cost being £15 6s. 10d. per head. According to the fifth annual report, read at the meeting of shareholders held in London in March, 1830, there were then on the company's estate 6,129 sheep, exclusive of lambs. In 1829 the ship *William Warrington* brought out 100 Saxon ewes. Mr. Smith says:—"These are referenced as the Wanstead flock, and a separate account was kept of them for a time." By this ship 54 Negrette rams and 146 ewes, noted as Trimmer's flock, were also imported, the cost being £16 18s. per head. Mr. Trimmer was associated with Lord Western in sheep-breeding. The originals were from the Royal Flocks at Kew, bred with Saxon rams. In April, 1834, 4 rams and 20 ewes, Cotswolds, were imported, at a cost of £9 0s. 5d. per head. The

only record I can get of the introduction of Leicesters is a memo. of an importation of rams per *Wave* in 1836. The late Mr. E. M. Curr informed me that Cheviot sheep were also imported. In 1839, the wool from the pure merinos realized in London from 3s. to 3s. 1d. per lb., while the cross between the merino and the common sheep brought from 11d. to 2s. per lb. Besides importing the finest sheep in Europe, the company also imported blood horses, Clevelands (light and heavy), pure cattle (chiefly Durhams, from the best herds in England), kyloes, and deer. The different breeds of stock were, under Mr. Curr's management, kept strictly pure; while as to the high quality of the sheep there cannot be a doubt, for we find the blood largely represented in nearly all the best flocks in Victoria and Tasmania.

The finest sheep brought to Victoria in the early days of its settlement were certainly of the Van Diemen's Land Company's breed, either direct from the Circular Head flocks, or from the celebrated breeders in Tasmania who obtained their original sheep from the Company. At the present day we find the most successful sheep, either in the show pens or in the sale-yard, are derived, wholly or in part, from the Van Diemen's Land Company's sheep, as witness the stud flocks of Messrs. Gibson and Son, D. Taylor, Jas. Gibson, T. Shaw, Messrs. Dowling and Son, Sir Samuel Wilson, and Mr. W. Cumming. The Company did an immense amount of good by selling young rams, and several of the finest stud flocks in Tasmania were founded with the imported merinos when they were cast for old age. The records of the annual sales of stock held by the Company in the Midland district would be very interesting now, but, unfortunately, many of the

records of the Company, including stud-books and notes of the sales of pure stock, were destroyed in a fire that occurred at Circular Head some years ago. Mr. E. Curr held the management of the Company's estate till 1841, and up till that time I have been assured by his son the late Mr. E. M. Curr, that the greatest care was taken by his father in keeping the different breeds of sheep separate. In the scanty records of the early sales that have escaped destruction I find the following gentlemen mentioned as purchasers:—Messrs. John Archer, R. Taylor, D. Taylor, Kermode, Gatenby, Phillip Smith, and Ashburner, in Tasmania; Messrs. Sinclair, G. Mercer, and Learmonth, in Victoria. Mr. Mercer appears to have bought largely. Pure merino sheep were sent to South Australia, and sold there by auction, but the auctioneer's note does not disclose the names of the purchasers.

Australia is greatly indebted to the late Mr. T. Henty for the improvement of the merino flocks, many of the leading stud flocks in Tasmania and Victoria having been indebted to his flock for some of their excellence. The flock was established towards the end of the last century, with pure merinos from the stud flock kept by His Majesty George III. The following notice of this flock appears in Thos. W. Horsfield's "*History of Sussex*":—"In the year 1796, Thomas Henty, Esq., purchased the demesne lands in this parish (West Tarring), consisting of 281 acres. This farm is in a high state of cultivation. The breed of merino sheep has been brought by Mr. Henty to great perfection; and from his flock many have been sent to New South Wales." In the early part of the present century, Mr.

John Street was presented by Mr. Henty with ten young sheep from his pure merino flock. These sheep Mr. Street brought to Sydney, arriving there soon after Capt. Macarthur's shipment of pure merinos, purchased at the annual sale from George III.'s flock. The quality of sheep imported by Mr. Street may be estimated by the fact that Mr. Cox, of New South Wales, gave cattle to the value of £150 for one of them. Mr. Street settled near Bathurst, New South Wales.

The fame of Mr. Henty's sheep caused considerable inquiry to be made about them by Australian sheepfarmers; and many sought an introduction to Mr. Henty, for the purpose of obtaining some of his sheep for exportation. Among the names of those who purchased sheep from Mr. Henty at this time were Messrs. Willis, Lawson, and others. Mr. Henty was a most successful exhibitor, and took a great many prizes all over the United Kingdom. At last he was merely an exhibitor for honour, being barred from taking prizes on account of the immense superiority of his sheep over those of any other flock in Great Britain. After a time Mr. Henty exported sheep from his flock to Australia, and succeeded in getting remunerative returns.

In the year 1829 he chartered the ship *Caroline*, and sent by her to Western Australia, in charge of his three sons—James, Stephen, and John—a large number of merino sheep of his own breeding, forty people from his own parish, and several thoroughbred horses selected from the Earl of Egremont's stud. The whole shipment arrived safely at Swan River, and, for a time, settled there. Finding, however, that the sheep did not do so well as was anticipated, the brothers Henty reshipped

their stock, and took them to Tasmania, in the *Cornwallis* in 1831. Mr. Thos. Henty, with his wife and daughter and three other sons, arrived in Launceston in April, 1832, in the barque *Forth*, which he had chartered conjointly with the Circular Head Company. In this ship he brought with him 30 merino sheep, several thoroughbred horses and mares, besides other stock. On his arrival, he found it was impossible to obtain the land which he was in England led to expect would be allotted to him. Fortunately, his son-in-law — Mr. Samuel Bryan—had land of his own, at Southmore, and relieved him of his difficulties by taking charge of the stock. Sales of rams were held at Southmore every year, the members of the Gibson family being among the buyers. In 1838 Messrs. Fisher and Handcock, of Adelaide, purchased several pure merinos at Southmore, which they took to South Australia. Messrs. Griffiths and Elms (Geelong), Mercer (Geelong), Learmouth (Ercildoune), Sir James Mathieson, Mr. Manly, Mr. E. Cox, Penrith, New South Wales, and many other gentlemen, also bought sheep from this flock at Southmore.

The late Mr. Francis Henty showed me a copy of a letter written by him to Mr. A. King, in which the following remarks occur:—"During the time they (the merino sheep) remained in Tasmania they were shown at the Midland Agricultural Society's shows, taking the prizes as they did in England. I left Tasmania myself for Portland in December, 1834, and early in 1835 the first sheep were brought over in one of our own vessels, but it was not till after my father's death in 1839 that the whole of his pure sheep were brought to Portland."

While the flock was kept in Tasmania the rams were sold at very good prices.

None of the pure ewes were sold out of this flock till the terms of Mr. Thomas Henty's will were made known in 1845, when they were all purchased from the estate by the deceased gentleman's sons, Edward and Francis, and his son-in-law, Mr. Bryan. The old ewes were first culled out, and sold to Mr. O'Connor, at £8 per head. From this time the degradation of the flock began, till at last, by mismanagement and neglect, the sheep of this once celebrated flock were quite unfit for stud purposes. At the sale of the Muntham flock, soon after shearing, in 1879, Mr. J. B. Pearson purchased the stud merinos kept by the late Mr. Edward Henty. As the sheep were just shorn, Mr. Pearson waited till the next season, in order to select the best for breeding. Of these sheep Mr. Pearson writes in 1880:—"I could not pick one sheep out of ten that I purchased, and had to sell them as fat sheep." He also purchased with the flock 300 rams, but they were so indifferent that he could not use one of them as a sire.

About twenty-five years ago a few American merinos of "Old Grimes" blood were imported into Australia, but, though heavily fleeced and splendidly covered, their wool was so much inferior in quality to the general run of merino wool in Victoria that stud flock owners refused to breed from them. About four years ago a large number of American merinos were imported into New South Wales, there being a general desire to increase the thickness of Australian sheep's fleeces. Consequently the American sheep, for a time, became the rage. The high prices paid for the first shipments led to the impor-

tation by dealers of a number of inferior sheep. The heavy fleeces cut by the American sheep made them great favourites till it was discovered that they lost very heavily (in some instances as much as 75 per cent.) in scouring, and that the value of their scoured fleece was generally below that of Australian scoured wool. The American merinos have some excellent qualities that have gained them firm friends among central Australian flock masters. Some Australian sheep-farmers of considerable experience went to America and purchased sheep from the best of the registered Vermont flocks, and with these they have formed stud flocks.

The produce of American merinos, bred in Australia and reared like Australian sheep, show a tendency to lose that excessively wrinkled skin which distinguishes the imported sheep. Their wool has less yolk and black tip than their parents. Breeding from Australian ewes and sires of Vermont blood has, in some instances, given results that are highly satisfactory to the proprietors.

I notice in the second volume of the "Vermont Merino Sheep-Breeders' Association Register" a mention of some ram and ewe fleeces that were selected in Australia as specimens of our best wool. These were scoured by the side of ram and ewe fleeces grown in New York. The percentage of shrinkage, it is stated, "was nearly as great from the Australian as from the New York fleeces, and the market value of the scoured wool from the New York fleeces was nearly twice as much as from the Australian." Unfortunately the name of the flock from which the Australian wool was obtained is not given. The public scouring trials we have had in Australia have given very different results. In the contest for the £100

prize at Deniliquin, New South Wales, the American or half-American sheep have never yet yielded as heavy a weight of scoured wool, or as high a value per fleece, as the Australian sheep.

The prevailing characteristic of most of the American merinos we have received in Australia is a lack of quality in the wool, and the presence of a large quantity of strong kemps on the neck and body wrinkles and on the thighs. In only a few American sheep have I found wool of the quality and character that distinguishes Australian stud merinos of the best class. On page 101 of the "Register" the measurements of the wool of a Silesian ram and ewe and an improved merino ram and ewe are given. The Silesian ram's wool was $\frac{1}{4} \frac{1}{80}$ of an inch, and the improved merino ram $\frac{1}{13} \frac{1}{15}$. The Silesian ewe's wool was $\frac{1}{13} \frac{1}{34}$, and the improved merino ewe $\frac{1}{13} \frac{1}{72}$. The crimps or waves in the wool numbered 25 to the inch. I have not made any inquiries as to the number of these crimps in Australian merino wool, but, to judge by what I have seen of American wools, they are much closer in the Australian wool. The only instance I have known of the number of crimps being counted was in the wool of a ram named Velvet, owned by Messrs. Cox Bros., Rawden, Mudgee, which numbered 35 waves to the inch. It was a most beautiful sample, and one that could not easily be matched. As to fineness of fibre, I do not think it would be difficult to get finer samples in any well-known Australian stud than those given in the "Register." The measurements given in another part of this book show much finer fibre than those quoted, and neither sample was selected for fineness.

BRITISH SHEEP.

THE great variety of soil and climate in Great Britain has, in the course of many centuries, led to the formation of a number of distinct tribes of sheep, each type being well suited to the locality in which it lived. During the last thirty years many of the old breeds have lost their distinctive characteristics, having been mixed with other breeds, or, as it is the fashion to say, they have been "improved."

For the purposes of the Australian sheep-breeder, it is only necessary to refer to three of the great divisions into which British sheep are divided, namely, the Mountain sheep, the Downs, and the Longwools. The forest breeds of sheep are not likely to be of any use to Australian husbandmen. The majority of the writers who have referred to the origin of our domestic sheep are of opinion that all the Mountain sheep of Europe are derived from one original type. M. Gobin * considered that the Hungarian, Wallachian, Gallician, Blackfaced Highland, Kerry, Norfolk, Welsh, Wicklow, Norway, Orkney, and Shetland sheep were all descendants of the sheep of the paleolithic period. The Welsh, Kerry, and Wicklow breeds approach more nearly than any others to the primitive type. Some of these breeds, particularly

* "Traité de l'Economie du Betail."

the Hungarian and Wallachian sheep, give indications of a strong infusion of Eastern blood.

Of the origin of the British Longwoolled sheep we have not the slightest knowledge.

I have already noticed the presence in ancient lacustrine dwellings of the remains of what naturalists call the "marsh" sheep, but in what way they differ from the ordinary sheep of the time, or why they are named "marsh" sheep, I have been unable to ascertain.

It is a peculiar thing that all our breeds of sheep are by inclination dwellers on the hills, save the longwools, and they are unmistakably denizens of the plain. I have always fancied that our longwool sheep must be descended from the ancient marsh sheep, and that the latter were the natives of flat and heavily-grassed lands. All the wild sheep now living are mountain sheep inhabiting the most inaccessible parts of high mountain ranges, which is one reason why they exist. The marsh sheep, being more easily captured, would soon cease to exist as a wild animal.

The breed of sheep known under the names of "Flandrine," "Texel," "Flemish," and "German," and described by naturalists as *Ovis Aries Longipes*, or long-legged sheep, was originally brought from the coast of Guinea about 400 years ago, and naturalized in Holland, whence it has spread over the countries bordering on the North Sea. It was originally a very long-legged sheep, and, though much improved, it is still far from being a well-shaped animal. It is extremely hardy, and withstands cold and wet admirably. It is reared on rank, wet pastures without contracting any of those diseases from which most of the other breeds of sheep suffer when

kept in such localities, and it is very prolific. M. Gobin says it was originally covered with hair similar to that of the Moufflon, and that it has become woolly since it has been acclimatized in Europe. It now yields a long combing fleece of strong, coarse wool. From some points of resemblance between the Texel and the Romney Marsh sheep, it has been supposed that they are members of the same family.

The fact that the Romney Marsh sheep are known to have been highly valued for their useful qualities long before the Texel sheep were imported from Guinea disposes of the theory of their relationship. As English longwoolled sheep were imported into Holland whenever the occasion served, it is very probable that the Texel sheep owe whatever good qualities they possess to infusions of English blood.

I know of no sheep in the world resembling the British longwool except the breed mentioned by Capt. Biddulph in "*The Roof of the World*," that are used as beasts of burden in Kashgar and Ladak. M. Vigne* speaks of a wether of this breed which he possessed, and describes it as a long-legged animal, about 3 feet in height, and resembling a Leicester sheep. He brought it to India, where it died of heat.

That sheep were used as food by the inhabitants of Britain at a period long antecedent to historical times there is abundant evidence. From the remarks made by Cæsar respecting Britain, it is generally accepted as a fact that the inhabitants were clothed in skins, and that they possessed no sheep, though he describes the population as "infinite," and the houses very numerous.

* "*Travels in Kashgar.*"

Strabo enumerates, among the exports from Britain, gold, silver, iron, corn, skins, and fleeces. Mr. Thos. Nicholas believes* that, 300 years before Cæsar's invasion, there was something like a settled society in Britain, that the people were numerous, imbued with spirit, with no little expertness, and busy with the cares of trade. He quotes Herodotus, and Himilco, the Carthaginian, in support of his statements. Mr. J. P. Yeatman† says they coined money, wore many-coloured garments, worked mines, made bronze in true proportions, and taught the Romans the use of the flail in thrashing corn. After the Roman conquest sheep were very numerous, as we gather from the panegyric addressed by Eumenius to Constantinus, of which the following translation is given by Mr. W. Camden:—"Oh, fortunate Britain, happiest of all countries in that thou didst first behold Constantinus, our Emperor. Nature justly bestowed upon thee all the advantages of air and soil. Innumerable are thy herds and flocks, with distended udders and loaded fleeces."‡ From the time of the Romans to the reign of William the Conqueror, I have been unable to glean any information respecting the sheep of Britain. In the reign of William the Conqueror, it is said, by William of Malmsbury and Geraldus Cambrensis, that a number of Flemings were driven out of their own country by an extraordinary encroachment of the sea. They came to England, where they were well received, and settled at Carlisle, but afterwards removed to Pembrokeshire. These people are said

* "The Pedigree of the English People."

† "Early English History."

‡ "Britannia."

to be the first in Britain who practised cloth-weaving as a separate trade. From this time there are occasional notices by various writers, which tend to show that the breeding of sheep and the woollen trade were looked upon as the most important industries in the kingdom ; and from the reign of Edward III. to that of Henry VIII. the wool staple was the object of repeated legislative attention. According to Holinshed's "Chronicles," in 1338 it was enacted that no English wool should be exported, but be made into cloth in the country. "And, further, an act was ordained for the receiving of strangers that were cloth workers, and order taken that fit and convenient places should be assigned to them, where to inhabit, with manie privileges and liberties, and that they should have wages and stipends allowed them till they were so settled, as they might gaine commodiouslie by their occupation and science." It was firmly believed, by many early writers, that the excellence of the Spanish merinos was owing to early importations of English sheep into Spain. Hall, in his "Chronicle," says of Edward IV.:—"He procured an amitie with Henry, Kynge of Castell, and Jhon. Kynge of Aragon, at the concluding of which amitie he granted lycense and liberty for certayn Cottesolde shepe to be transported into the country of Spayne (as people report), whiche have so there multiplied and encreased that it hath turned ye commoditie of England moche to the Spanyshe profit, and to no small hynderance of the lucre and gayne whiche was before tymes in England raysed of wolle and felle." This was in 1465. Holinshed, who lived in the time of Elizabeth, says:—"Our shepe are verie excellent, sith for sweetness of flesh they passe all

other, and so much are our woolles to be preferred before those of Milesia and other places, that if Jason had known the value of them that are bred and to be obtained in Britaine, he would never have gone to Colchis to look for anie there. For, as Dionysius Alexandrinus saithin his *De situ Orbis*—‘It may by spinning be made comparable to the spider’s web.’ What fooles then are our countrimen, in that they seeke to bereve themselves of the commodoty by practising dailie how to transfer the same to other nations in carieng over their rams and ewes to breed and increase among them.” This chronicler here refers to “sundrie traitrous merchants” who obtained license to export a few sheep to Spain and took a great many. He also states that many English sheep were sent over to “Belgie,” and makes this peculiar remark with respect to them, that, “although our rams and wethers do go thither from us never so well headed according to their kind, yet after they have remained there a while they cast their heads, and from thenceforth they remain polled, without any hornes at all.” He alludes to their numbers in England, and says:—“There is never a husbandman but hath more or less of this cattle feeding on his fallows and short grounds, which yield the finer fleece.” The increasing numbers of sheep in Britain is the subject of frequent comment by old writers. In Sir Thomas More’s “Utopia” (1551), complaint is made that the country was overrun with sheep, to the neglect of agriculture. This was at last felt to be such a grievous matter that the legislature was obliged to interpose with Acts of Parliament to promote tillage, and prevent the lands of England from being almost all converted into pasture. A long period follows in which

the breeding of English sheep is very little noticed, till the great improvements were made in the principal breeds of English sheep by Jonas Webb, Bakewell, Goord, and Ellman. The breeds appear to have been kept distinct, each one being well suited to the locality in which it was reared. The celebrated breeders of the British sheep whose names I have mentioned are said to have effected their changes by selection alone, and without the introduction of any blood foreign to the breed each one improved. Since their time, great changes have taken place in the mode of breeding sheep in England. The various breeds of longwool sheep are being fused. The Down sheep have all been improved by a strong infusion of the Southdown, and even the hardy mountain sheep have been submitted to the same process. The slower, but, I believe, more sure method of effecting improvement, by means of skilled selection in a pure breed, which was followed by Bakewell, Goord, Ellman, and Webb with so much success, has been abandoned for the more expeditious plan of crossing the different breeds with an "improved" one. This practice, I cannot but admit, has, in some instances, met with a considerable amount of success, but whether the improvement thus obtained will be a lasting one time alone can show. One thing, to my mind, is plain enough: in this race to produce early maturity, and to induce a predisposition to laying on fat, the sheep-breeders of England have advanced too far. They have discounted a bill which must be met, and the result will be that the life of the animal will be shortened, and the utility of the race seriously impaired. Complaints are now frequently heard, not only in England, but in Melbourne also, of the

preponderance of fat in the English breeds of sheep, and the result is that many householders refuse to purchase longwool mutton. The same causes have led to the same results in the breeding of shorthorn cattle, if we may believe the rumours of a deficiency of flesh and superabundance of fat in the carcasses of shorthorns which reach us from time to time. The question of breeding English sheep is an important one for Australia. In nearly all the colonies there are localities which are more suited to the rearing of some of the English breeds than the merino, and the advantage of having a true breed of sheep well suited to each locality is one that must not be overlooked. Hitherto the attention of Australian sheep-farmers has been directed almost exclusively to the Lincoln and Leicester breeds; but there are many localities, that are now neglected or used for rearing very indifferent specimens of Lincolns, Leicesters, or merinos, that would be much more profitably employed in rearing some of the other varieties. I have confined my remarks entirely to British sheep, as they alone of all the breeds reared in Europe, the merino of course excepted, are worthy of notice. That the old breeds of British sheep are not altogether extinct we had evidence at the famous Jubilee Show of the Royal Agricultural Society, held at Windsor, in June, 1889. At this show there were prizes offered for twenty-two classes of British sheep, and twenty-five breeds were shown. The non-British breeds of sheep were African, Zulu, and merino.

The following are the principal breeds in the divisions of British sheep:—

LONGWOOLS.

LINCOLNS.—This breed stands at the head of the long-wool sheep in the estimation of all sheep-breeders, on account of its size, the excellence of its wool, and the weight of its fleece. The old Lincoln sheep is now extinct. He was described as large, ill-shaped, and slow in arriving at maturity, but famous for the beautiful lustre of his wool. Mr. Macdonald says* :—"The Lincolns were described in 1749 much the same as they were before the type was altered by modern English sheep-breeders." The improved Lincoln is the favourite longwool sheep with Australian flock-masters. It is almost exclusively bred where the pastures are heavy and the climate moist, and is largely used throughout Australia for breeding crossbred sheep. Lincolns were very little known in Australia till 1873, when they suddenly became the fashion. During that year 905 Lincolns were imported from England to Victoria, at a cost of £36,000.

LEICESTERS.—Mr. John Wood, in the *Agricultural Gazette*, 11th February, 1884, gives the following account of this breed :—"There are two varieties of the Leicester sheep in this country, bearing respectively the titles of Leicester and Border Leicester, and, though now recognized as different breeds, they both originally sprang from the same foundation, viz., Bakewell's improved Leicesters, which became famous about the year 1760. Seven years after that date the brothers Matthew and George Cully introduced the Bakewell Leicester into Northumberland in large numbers. During the succeeding 20 years several large flocks were established in the

* "Cattle, Sheep, and Deer."

Border counties. The purity of these flocks was maintained by the owners repeatedly hiring rams from the members of the Bakewell Club. As high as 400 guineas was paid for the hire of a ram for one year. Many hirings took place in the Lothians, Berwickshire, and Perthshire." The system of hiring rams from the Midland counties of England continued till about 30 years ago, when the name of Border Leicesters was given to them. It is a distinction in name only, for their breeding is identical with the English Leicesters. Some of the Border Leicester flocks have a clear recorded pedigree of over 80 years, tracing to the best English Leicesters of the last century. The Leicester has a great aptitude for laying on fat. It is well shaped and has been used more than any other breed to improve the various races of British sheep. Leicesters were imported into Tasmania in the early days of the colony, and pure flocks were kept up until the heavier-fleeced Lincoln became the fashion. The Leicester does not yield such a heavy fleece as the Lincoln, is not so large in frame, and the wool is less lustrous and probably less valuable. The breed is believed to be an ancient one.

ROMNEY MARSH SHEEP.—Of all the British breeds this is best fitted for grazing in cold wet pastures. They are remarkably hardy, and are seldom attacked by those diseases to which other sheep so quickly succumb when raised in cold, marshy country, and fed on rank, coarse pastures. This is a famous old breed, and any attempt to improve it has proved a failure. The earliest mention of these sheep I have met with is given by Mr. R. Furley.* It is to the effect that when the widow of

* "The Weald of Kent."

De Montford, sister to Henry III., was residing at Dover, the garrison at that place were supplied with sheep from Romney Marsh for 22d. each.

Mr. D. G. F. Macdonald says that "in the year 1550 laws were made for the preservation of this breed of sheep."* The Romney Marsh sheep appear to have undergone but little change till Mr. Goord commenced their improvement about 1840, and he always maintained that his improvements were effected by selection alone. The old Kentish sheep-farmers were fully aware of the great constitutional advantages their sheep possessed over other breeds, and carefully avoided spoiling the pure type by the introduction of outside blood.

This wise course has not been followed by some modern breeders of Romney Marsh sheep. It became the fashion to "improve" the breed by an infusion of Leicester blood, and a short time ago I noticed that on some farms the sheep had become so delicate in constitution they could not live on Romney Marsh.

COTSWOLD SHEEP have the most illustrious history of all the breeds of British sheep. They are frequently noticed, and in very favourable terms, by the English writers, and were held in high estimation both for their wool and mutton. In Hall's "Chronicle," there is a complaint that the English woollen trade was injured by Cotswold sheep being given by Edward IV. to John, King of Aragon, and the same complaint is made by Holinshed. In 1394 a portion of the dowry of Catherine, daughter of John of Gaunt, married to the hereditary Prince of Castile, consisted of a number of Cotswold sheep. Indeed, until lately it was believed by

* "Cattle, Sheep, and Deer."

many that it was the cross of these Cotswold sheep on the native Spanish breed that produced the merino. Cotswolds are admirable farmers' sheep. They yield a fair fleece, from 6 to 8 inches in length, and weighing from 8 to 10 lbs. They are of good size, well-shaped, and have a great aptitude to lay on fat. Hitherto they have not taken the fancy of Australian sheep-farmers, though there are one or two pure stud flocks in Victoria, from which excellent stock can be obtained. Mr. F. H. Bowman says* :—"The introduction of Leicester sheep into the Cotswold district has greatly improved the old native breed, and the new Cotswolds have a decided advantage over the old, on account of the greater hardihood as compared with the pure Leicester, and the deeper grown nature of the wool than in the original stock."

THE PENISTONE.—This is the most peculiar breed of sheep to be found in England. It is bred on a healthy tract of country, on the borders of Yorkshire, Lancashire, and Derbyshire, about twenty-six miles in length by twenty in breadth. A singular characteristic of this breed is the length and muscularity of its tail, in which it differs from all other sheep. This enlargement is not at all analogous to the growth of fat which takes place in the tails of some Eastern breeds of sheep. They are coarse in form, the limbs bony and the feet large, but the flesh is of first-rate quality. This breed is restricted to its own small district.

DOWN SHEEP.

THE SOUTHDOWNS have existed in their native county of Sussex from time immemorial, and many writers have

* "Structure of the Wool Fibre."

expressed the opinion that they are indigenous to that locality. All attempts to improve them by crossing with other breeds have failed signally, as with the merino, the Romney Marsh, and the Herdwicks. Mr. T. Ellman, in a paper read before the Council of the Royal Agricultural Society of England, March, 1865, regards them as the purest breed of sheep in England. He says the first distinct notice of them was about 200 years ago, when many flocks on the downs were annihilated by a disease called small-pox, which was imported from Holland. He quotes Mr. Arthur Young to the effect that these sheep were greatly admired in 1788 for their hardy constitutions and the fine flavour of their mutton. Mr. Young states that they were believed to be native to the South Down slopes, but that little was heard of them before the Norman conquest. Mr. H. Woods, in a lecture delivered before the Institute of Agriculture, 23rd March, 1883, makes the following remarks on this breed:—"The Southdown breed of sheep is believed to be indigenous to the Downs of Sussex, having existed there before the conquest: one of the purest and most unmixed breeds of Britain." They are described by writers towards the end of the last century as being speckled faced, long and thin in the neck, high on the top of the shoulders, slack in the girth, high and narrow on the loin, with the tail set on very low, sharp on the back, flat ribbed, narrow in the forequarters, but generally showing a fairly good leg of mutton. They were regarded as plainly formed, if not ugly sheep, which produced good and fine-flavoured flesh. They were very small as compared with the Southdowns of the present day.

To Mr. J. Ellman, of Glynde, belongs the credit of bringing the Southdown into more general notice. About 1730 he commenced a course of carefully considered and highly successful experiments with them, which he carried on for over half a century.

The country in which the Down sheep are found extends from the south coast, near Weymouth, by Salisbury to Wallingford, thence by Dunstable and Cambridge, and ending at the Wash. It comprises the downs of Kent, Sussex, Dorsetshire, Salisbury Plain, and Marlborough Downs. Of all the sheep reared in this stretch of country, the Southdown is regarded as the most pure and ancient breed. Mr. Alfrey is convinced that the breed was originally a black one, and that if they were left in a wild state for a few years they would become entirely black.*

SHROPSHIRE DOWNS.—The honour of being a distinct breed is claimed for this magnificent farmer's sheep, but there is no doubt that it is an established variety, the ancestors of which appear to have been of "Down" blood. Plymley, in his "General View of the Agriculture of Shropshire," published in 1803, says:—"There is a breed of sheep on the Longmynd, with horns and black faces, that seem an indigenous sort. They are nimble, hardy, and weigh near 10 lbs. per quarter, when fatted. Their fleeces on an average may weigh $2\frac{1}{2}$ lbs. . . . The farmers of the hill country seem to think the greatest advantage they derive from the access of foreign stock is from the cross of the Southdown." Mr. Tanner, in a paper on the agriculture of Shropshire,† says:—"They

* "Young's Annals of Agriculture."

† "Journal of the Royal Agricultural Society of England," vol. xix.

now excel all other downs in this valuable point to a connoisseur by having a well-formed muscular system, giving plenty of lean and yet interlarded with a moderate quantity of fat." He describes the Shropshire Down as a crossed animal between the Longmynd and the Southdown.

OXFORD DOWNS.—These sheep are of large frame, and the mutton is said to be excellent. They were formed by crossing Hampshire Downs with Cotswolds. By careful selection and long in-breeding the type has become well established. The first Oxford Down sheep were shown in 1851 by the late Mr. J. Gillett, of Brize Norton.

HAMPSHIRE DOWNS.—This is a cross between the Southdown and the old white-faced, horned sheep of Hampshire, a gaunt, ugly animal with a large head. The Hampshire Down is held in great estimation by British sheep-farmers. They are superior to all other breeds for producing lambs for market. The wethers of this breed mature very early and attain a large size. They are handsome sheep and extremely profitable.

SUFFOLK DOWNS.—The following description of this breed is given in the "East Anglian Handbook," 1884:—"Originally formed by a cross between the old horned Norfolk blacks and Southdowns some 50 years ago. Many improvements have been effected by judicious selection of animals, and further crosses with the Hampshire Downs. The horns have now, as a rule, disappeared from the Suffolk sheep, but the roots are still traceable and sometimes shown in the rams. Size has been gained, so that the Suffolk may rank between a Southdown and an Oxford Down, and its

meat is lean, short, and juicy—capital mutton. The sheep of this breed are active and hardy, good foragers, living well where larger Downs would half starve, upon tracts of heathy or seaside marshy land. The ewes are very prolific.”

NORFOLK SHEEP.—This breed is derived from a very old and rather peculiar race of sheep. The old breed is described in Kirby's “Suffolk Traveller,” 1732, as being spread all over Norfolk and Suffolk. Their flesh is described as excellent, but not keeping so well as that of the Southdown. The writer says they are voracious and require more food in proportion to their weight than other sheep. Mr. A. Young, who bred these sheep for many years and was a great admirer of them, says they thrive on the poorest land. He tried an experiment in crossing them with a Southdown ram in 1784, and found the cross such an improvement that he persevered with it. Mr. Young says that the carcass of a Norfolk would not keep so long by 24 to 48 hours as that of a Southdown. The old type has now completely disappeared. A writer in *The Field*, 23rd January, 1886, says of the old Norfolk breed:—“Probably the Norfolk sheep was, when A. Young wrote, the nearest approach to the deer of any of the genus *Ovis*. Not only does the evidence of the flesh support this, but no one who ever saw a breeding flock of the old kind but must have noticed, if he had had any opportunities of observing deer, how much more like the Norfolk tups were in their ways to the fallow buck than they were to the rams of the longwoolled breed. In those days most of the Norfolk ewes were horned; the rams were invariably so.”

MOUNTAIN SHEEP.

HIGHLAND SHEEP.—This breed is found throughout the north of Scotland and the Scottish Isles, and is famous for the excellence of its mutton. They are extremely hardy and have much the appearance and habits of the goat. Their short tail has led to their being called “Short-tailed sheep.” They are of various colours—black, brown, grey, white, and spotted. The fleece consists of a mixture of hair and wool. The wool falls off each year on the approach of summer, leaving the hair alone as a covering during the hot season. The fleece is therefore never shorn, but plucked off the sheep. It is fine and soft, but does not felt well.*

WELSH SHEEP.—In the mountains of Wales there are two breeds of sheep, one of which inhabits the higher mountains, the other the lower slopes. The former is various coloured, like the Highland sheep, but it has a long tail and a ridge of hair on the back, with the throat and dew-lap white, and the face and legs always black. The other breed, the soft-woolled sheep, is the distinguishing breed of Wales. They are small and active, and furnish the wool from which the famous Welsh flannel is made. The flesh is firm and sweet and much in request as an article of diet.

IRISH SHEEP.—In the counties of Wicklow and Kerry there are two breeds of mountain sheep, one of which resembles the soft-wool sheep of Wales. They are wild little animals without horns and with white faces and legs. The higher mountain sheep have their wool much

* “The Structure of Wool Fibre.”

mixed with hair. The mutton of both breeds is of the highest quality.

HERDWICKS.—This breed is probably the hardiest of all domestic sheep. One writer remarks of them:—"It is in their ability to tide through a Siberian winter that the real blue blood of the Herdwick comes out." They are found on the mountains of Westmoreland, Cumberland, and Northern Lancashire. "Dalesman," in the *Agricultural Gazette*, January, 1884, says:—"There does not appear to be any reliable testimony as to their introduction. One version is that a sheep-laden vessel was wrecked on the Cumberland coast, that the sheep swam ashore, took to the mountains, and thus established a hardy breed of sheep; for certainly neither the horned Scotch nor the Cheviots could live where do the Herdwicks." In colour they are a mottled grey. The Herdwicks are locally spoken of as Fell sheep, and it is a common saying that a leg of Fell mutton is a joint fit for a king.

CHEVIOTS are the most valuable sheep on the borders. They were bred originally in the Cheviot Hills, whence they take their name. They have extended southward into the hilly districts of England, and northward into the highlands, where they are supplanting the native mountain sheep. They are very hardy, and thrive well on poor pasture, and withstand the severe winters, which render the Cheviot Hills unsuited for other breeds. They are hornless, with white faces and legs. The carcass is long, the back straight, shoulders rather light, the ribs circular, and quarters good. They are the most docile of all the mountain sheep. This breed has been "improved" by crosses of various English sheep,

but it is doubtful if their hardihood has not suffered thereby.

OTHER ENGLISH BREEDS.—The many varieties of sheep to be found throughout England have been so altered by infusions of Leicester, Lincoln, or Down blood that nearly all the old characteristics have disappeared. Often the improvement obtained by the introduction of fresh blood has been at the cost of those useful qualities which rendered the old breed so valuable in the locality in which it was originally established. The following are a few of the most noted of the old breeds:—

DORSET SHEEP.—This is probably the best of the old horned sheep of Great Britain. It has been preserved pure from a very remote period. They are strong hardy, active, and much wilder than any of the Down breeds. They have white legs and faces and horns of moderate length in both sexes. The great value of this breed consists in its fecundity, as they rear a much larger number of lambs than any other breed. For this quality they are highly prized by farmers who raise lambs for market. This useful sheep would be valuable to Australian farmers. The old Wiltshire and old Hampshire, now nearly extinct, are said to have been varieties of the Dorset horned sheep.

THE RYELANDS.—This breed is believed to be the descendants of a fine-woolled breed of sheep introduced by the Romans when they settled permanently in Britain and established woollen manufactories in the island. If this supposition is correct, and there is much to justify it, the Ryelands must be descended from the same stock as the merinos of Spain. The old Ryelands greatly

resembled the merinos in appearance and in the character of their wool ; and of all the British breeds of sheep the Ryeland was the one that crossed best with the merino, when the latter breed was introduced into England by George III. In fact, this may be looked upon as the only cross that did succeed. The Ryelands are now very seldom bred in England.

MANAGEMENT OF THE FLOCK.

“He to whom an abode in the city lies close at heart has no need of a country estate.”

—MAGO THE CARTHAGINIAN.

IN submitting the following remarks on the management of the flock, it has not been my intention to write an exhaustive treatise on the subject, but to give such information of a general nature as will be found useful to the beginner in sheep husbandry. Though some assistance may be drawn from books, skill in sheep husbandry can be obtained only by close attention and practical experience. Therefore let anyone who has a fancy to become a sheep-farmer take to heart the words of the old-world farmer which I have placed at the head of this division. He who delegates to servants the whole management of his flock is no true husbandman, and any success that his sheep may attain is to be credited to his servants and not to himself. The business of a husbandman has been an attractive one from time immemorial, and in all nations that have attained a high degree of civilization, the rearing and treatment of the domestic animals has been regarded as an honourable occupation.

TYPE OF SHEEP.—In a newly-settled country like Australia, where our experience is so limited, the most

important question for the intending sheep-farmer to decide is, what type of sheep will thrive best in the locality in which he has fixed his home. A judicious selection in the first instance will save a world of after disappointment, and will materially assist in making the occupation of sheep-farming a pleasant and remunerative one. Within the wide bounds of Australia there is a great diversity of climate, soil, and pasture, and it naturally follows that the variety of sheep which will prove remunerative in one district will fail in another. Indeed, the country in some places changes so suddenly that adjoining properties require dissimilar types of sheep to work them profitably. Before making a selection it will be advisable to take advantage of the experience of others and note carefully the character of sheep reared on similar soil in the neighbourhood. This will generally give a sufficient indication as to what sheep should be chosen, and, what is equally important, what type should be avoided. The pasture on which the longwool sheep will thrive may be easily distinguished from that which is better suited to the merino; but there are longwools and longwools as there are merinos and merinos, and it is in making a judicious choice of the type most calculated to thrive in the locality on which much of the success of the venture will depend. There are stud flocks that have made their mark all over Australia; but no sheep-farmer can expect to commence his flock with selections from a stud. In the new as in the old world each district is producing a type of sheep marked by certain characteristics. This is the effort of nature to suit the animal to the conditions of life in the locality. In many places the change from the type

originally introduced is still going on, and it will be many years before the true sheep of each district is thoroughly established; even now anyone can distinguish between sheep reared in Tasmania, Victoria, Riverina, and South Australia, and to the close observer there is a difference in the sheep reared in different districts of each colony. Where these local peculiarities are very pronounced it will be advisable to preserve them, effecting any improvement by a judicious mixture of stock having the qualities it is wished to develop, without destroying their own special characteristics. The most singular instance of the effect of climate and pasture I have met with in my researches is thus recorded by a modern traveller* :—“The description of sheep which produces the jet-black curly fleece that is made into caps in Persia, and is so much esteemed everywhere, is peculiar to Karakool, a small canton between Bokhara and the Oxus. The animal will thrive in no other place, and has been transported to Persia and other places without success. When removed, it loses the peculiarity in its fleece, and becomes like any other sheep. The people attribute this curly fleece to the nature of the pasture.”

I have met with several authorities for the statement that the peculiar enlargement of the tail which characterizes several breeds of Eastern and African sheep is mainly due to the character of the pasture on which they are fed, and that on removal to a different climate and pasture the size of the tail is sensibly diminished. These are extreme instances, but they show how necessary it is to study the aspect of nature in selecting the type of sheep to breed in any locality.

* “Travels in Bokhara,” by Lieut. Alex. Burnes.

Nature is stronger than man, and we could not, if we would, breed sheep of a uniform type all over Australia.

The greater portion of Australia is admirably fitted for sheep husbandry, for within its wide bounds there is scarcely a district in which sheep-breeding cannot be carried on to the satisfaction of the proprietor. Though the peculiarities of aspect, soil, and climate in some localities may hinder the stock farmer from attaining the results achieved by those whose lines have fallen in pleasanter places, still something may be done in the way of rearing a useful breed of sheep, that will afford an interesting and fairly profitable occupation to the flock-master, who, in the gradual improvement of his stock and land, will not only better his own position but contribute to the development of the prosperity of the country. As a rule the merino is the sheep best adapted to the Australian climate. In Europe this noble breed has been successfully reared from Sweden to the lands bordering on the Mediterranean. In America the merinos have a wide range, while in Australia they form the bulk of the sheep, from the snow-clad hills of southern New Zealand to the burning plains of tropical Australia.

There is practically no limit to the enterprise of Australians in the way of sheep-farming. In taking up new country difficulties will doubtless be met with, but I am satisfied that in time they will be overcome. I am old enough to remember what the wool of the Riverina sheep was like when that country was first stocked, and anything more hopeless it would be impossible to imagine. Old Victorian sheep-farmers

used to shake their heads most sagely, and confidently predict that the attempt to grow wool on the other side of the Murray would never succeed. The splendid exhibition of wool held by Messrs. R. Goldsbrough and Co., in 1878, showed the public what a marvellous change had come over the Riverina sheep in less than 30 years. The coarse, short-stapled, unkindly wool of old had disappeared, and in its place was a robust type of wool of a most useful description, rivalling in length of staple and surpassing in weight of fleece the wool grown in the western portion of Victoria, the Australia Felix of the old settlers. As the merino outnumbers the other varieties of sheep by almost thirty to one, I have mainly directed my remarks to the treatment of that breed. The following instance of the hardihood of the Australian merino sheep came under my notice lately. Messrs. Raleigh Bros. had 15,000 ewes, thirteen years old, on their station, Caiwarro, on the Paroo, near the southern boundary of Queensland. A few years ago this country was regarded as a desert, and naturally so, for the climate seems to oscillate between a mild drought and a severe one. From April, 1888, to April, 1889, only $2\frac{1}{2}$ inches of rainfall were registered at the head station, and 1 inch of this fell in an hour. The old ewes were turned into large paddocks to take their chance, and at the end of the year 14,000 of them were mustered. Since April, 1889, the season has been an extremely good one, and all the ewes are fat and have good fleeces.

THE SHEEP WALK.—In purchasing a sheep walk there are other matters requiring attention besides the natural capabilities of the soil, and one of these is the facility

for sending produce to market—a thing that deserves more attention than is often bestowed upon it. The business of stock husbandry is now entering upon a new phase; it is being wedded to agriculture, a pursuit that the Australian stock-owners of old regarded with the greatest aversion, and foolishly enough the feeling was reciprocated by the early Australian agriculturists. All that is now at an end, and people are realizing that in Australia, as in the old world, agriculture and stock husbandry must be combined to fully develop the capabilities of the land. Somewhat late in the day, we in Australia are beginning to discover that these pursuits, instead of being antagonistic, are mutually beneficial. Early in the 16th century Master Fitzherbert wrote* :—“An housbande can not well thryve by his corne without he have other cattell, nor by his cattell without corne. For els he shall be a byer, a borrower, or a beggar.”

As a rule, pasture that will keep about a sheep to the acre, or two sheep to three acres, is more healthy for merinos than pastures that will keep two or three sheep to the acre. On such rich pastures the longwool will be the more profitable sheep to breed.

There is another matter which it would be well for one intending to purchase a sheep walk to carefully consider, and that is the character of the persons living in the immediate neighbourhood. The presence of bad neighbours is a serious bar to the enjoyment of rural life. Columella has the following remarks on this subject :—“It is acting like a madman for one to make bad fortune for himself, which that man does who, with his

* “The Boke of Husbandry.”

own money, purchases a wicked neighbour." Many an Australian sheep-farmer will realize the full significance of the words of an older writer than Columella:—"No one would loose his ox if his neighbours were not naught." Therefore, it is advisable to avoid bad neighbours, as far as possible, when purchasing a sheep farm.

UNIFORMITY OF SHEEP.—Having decided on the description of sheep most likely to thrive and give a good account of themselves on the farm, it is most essential that the animals selected to form the breeding flock should be of sound constitution, and, as nearly as possible, of the one character. The stud flock owner is obliged to breed sheep of various styles to suit the fancies of the different classes of customers, but the flock-master should aim at having as great a uniformity among his sheep as possible. The great secret of successful sheep-breeding is in the selection of the breeders. Here the culling must be strict, and must be the result of a skilful and careful scrutiny of each individual. In very large flocks this work cannot be carried out so well as in moderate-sized ones. In small flocks each sheep should be examined with as much care as in a stud flock. Indeed, the small flock should be in all respects a stud flock. I was once assured by an old wool buyer that the greatest recommendation a clip of wool could have was uniformity. European buyers soon discover this quality in a clip, and will give a higher price for such a brand of wool than for another which promises better but has not a character for regularity. In endeavouring to secure a uniform character of wool, there is no occasion to cease from any attempts to improve the quality or to increase the weight of the

fleece. Improvement should be gradually effected by following out a well-considered plan and with a definite object in view. Breeding from animals of extremely opposite characteristics is a bad plan in all branches of stud husbandry, but in sheep-breeding its effects are worse than with any other of our domestic animals. The result in most cases is to cause such an oscillation in the character of the sheep as to leave them without any defined type.

THE RAM.—In selecting the breeders it will be well to remember that the ram is half the flock, and that purchasing an inferior ram to save a few pounds is false economy. This is money lost and not money gained, and he who pursues such a policy will never make a good sheep-farmer. The ram should stand square on his legs, have well-arched ribs, and a free, bold carriage. A well-developed dew-lap and apron is a good sign in a merino ram. The fleece should be as even as possible in length of staple, density, and quality. He should be well covered on the thigh, arm, and belly with true wool. A broad forehead, with a good frontlet of wool, and face and ears soft and downy, are essentials. A narrow-faced ram, bald on forehead, with thin, hard ears and red fiery eyes, should be avoided, no matter how good his fleece. The horn should be of fair size, not close to the head or projecting far out. A polled ram is not objectionable on that account. We have excellent proof that polled rams will get quite as good stock as horned ones. The celebrated stud flocks bred by Messrs. Thomas and George Parramore, Tasmania, are descended from a very fine polled ram. However, unless the polled ram is exceptionally good in form,

fleece, and pedigree, I would prefer a horned one. The merino ram is a horned animal, and it is better to keep to the type. The character of the wool is a good indication of constitution. A ram with a weak, delicately fine fleece may, by housing and coddling, take high prizes at the leading shows, but he is not a breeder's sheep; his stock will be indifferent, and on the least hardship his delicate silky fleece degenerates. It is better, in my opinion, to have the ram's fleece a trifle robust than to use one whose wool is of that beautiful silky nature that carries no weight with it, and yet often wins high prizes at sheep shows. I must confess to a preference for a merino with a good deal of loose skin on the throat and chest, having always found them the best sires. Excessive folds on the skin, such as are seen on many of the Vermont sheep that have of late years been imported into Australia, are to my mind objectionable. They are "show" or "fancy" points carried to excess. Such sheep seldom fatten well, and they appear to be going out of fashion in America. One of the best American writers on the merino sheep has the following on this subject*:—"If they (the folds on the neck and body) bear additional wool this is counterbalanced by its defective quality on the upper edges of the folds and the great unevenness they thereby give the fleece. Better to keep one or two more sheep per cent. and obtain the same amount of wool. A wide dew-lap plaited, or smooth single one, branching into two parts under the jaws, with 'the cross' on the brisket, were all that the old breeders of merinos desired in this way on ewes.

* Randall's "Practical Shepherd."

To this might be added moderate corrugations on the neck in the ram." Though the wool may be a little strong, there should be no kemps in it. As a rule, the face will give a good indication of the character of the wool. Patches of kemp are sometimes found in rams that are otherwise almost faultless, and these should be enough to exclude such rams from any carefully bred flock. Never purchase a ram that has been fed up for show: such sheep are unfitted by their training to be turned out at grass, and as breeders cannot be depended upon. The sheep-breeder will find it to his advantage to buy his rams off grass, and from a well-known flock which possesses the qualities he wishes to secure. When a housed and fed ram fades away to nothing on being turned on to the natural pasture for a year and heavily worked, people say it is a want of constitution, whereas it is nothing but unfair coddling which has unfitted the animal to what the Americans call "rustle" for his living. I have ever been in favour of not using rams until they are four-tooth, and many experienced flock-masters in Australia are of the same way of thinking. I find, however, that a large number of sheep-breeders habitually use two-tooth rams in their flocks, and they say that no ill effects follow from the practice. I cannot help thinking that to breed from such an immature animal as a two-tooth ram must in the end have a deleterious effect on the constitution of the sheep.

On the approach of the coupling season merino rams are extremely apt to injure themselves by fighting. So fierce are these battles that the result is not unfrequently the death of one of the combatants. The Vermont,

U.S.A., sheep-farmers have an excellent and extremely simple plan of putting a stop to these combats. It consists of fastening a piece of stout leather to the ram's horns, broad enough to completely cover his face. In a corner of this leather visor there is a hole through which one horn is slipped, and an opening is made to take in the other horn, round which the ends are fastened. The visor comes well below the eyes but does not blind the ram. By raising his head he can see all round him, but directly he lowers his head to fight his opponent is obscured from view, and the combat does not take place. This visor spoils the beauty of the ram's frontlet, but that is a small matter to losing the services of a valuable ram. Epicharmus, the Syracusan, we learn from Columella, affirms that a fighting, quarrelsome ram is tamed by having his horns bored by a gimlet close by his ears, where the horn begins to curve, but I have never known this plan practised.

THE BREEDING EWES.—The time for lambing will depend on the climate, aspect, and pasture of the sheep walk. Autumn lambing is much practised in the southern portion of Australia. In New Zealand and Queensland spring lambing is common, and the sheep are lambed at both seasons in Tasmania. This is a matter the sheep-breeder must arrange to suit his locality. Lambing should take place when there is a good supply of green grass to afford plenty of milk for the lambs. When the lambing occurs too early in the autumn it sometimes happens that the ewes begin to drop their lambs before the autumn rains have started the grass. On the other hand, a late lambing exposes the newly-born lambs to the cold storms of winter before they have

strength to withstand them, and thus many are lost. The period of gestation in the sheep ranges from 145 to 160 days; the mean may be taken at 150 days. The rams and ewes should not be put together immediately after shearing or there will likely be a considerable falling off in the number of lambs. Ewes may be put to the ram at four-tooth and bred from till they are six years old. In a general flock it would be advisable to get rid of them before that age. In a stud flock, ewes of very great excellence may be kept to a much greater age, but what may answer well in a few instances is not advisable to attempt with the general flock. Sheep have been known to breed in America till 24 years of age, and they will, doubtless, last as long in Australia, the climate of which is better suited to the merino sheep than is that of America. In breeding a small flock, where a close inspection of each animal is practicable, the ewes should be so selected that any defects they exhibit should be counterbalanced by the superior qualities of the ram. It is, therefore, advisable to know, for future guidance, what is the sire of each lamb. Some years ago a very good plan was given in *The Field* for the management of breeding ewes. Before putting each ram to the ewes selected for him, his breast was marked with red, blue, or green, which was daily renewed as it was rubbed off. At the end of a week the ewes served were drawn off and put in another enclosure with a ram marked with a different colour, so that if any of the ewes returned they would show it. The ewes were marked with a dot of paint of the same colour as the ram. At lambing time, each lamb was marked with the colour of his sire, so that at weaning time the flock-master could form a very good

idea of the value of his different sires. With stud or small flocks there is nothing to prevent this plan being carried out. In cold, wet, and exposed situations some description of shelter for the lambing ewes is desirable, and for this purpose nothing is better than clumps and belts of trees. Where there are no trees and the land lies open to the prevailing winds, it will be advisable to run up low breakwinds to shelter the sheep. They will cost but little and will pay for themselves the first year. I am no advocate for pampering sheep, but there is a difference between coddling sheep and giving the lambs a chance of existence. Where the surface is broken into hill and dale with trees and bushes growing, there is no necessity for any shelter for the ewes and lambs, but on treeless plains enclosed with skeleton fences something of the sort is necessary where ewes are lambed.

THE FLEECE.—In culling the breeding flock care should be taken to eliminate all weakly sheep, no matter how beautifully fine the quality of their wool. Such sheep cannot produce good stock, and it is a waste of money to put them to high-class rams. A patch of coarse, glistening wool on the thigh is a bad sign. There is bad blood in the sheep that have them, and they should be avoided. Length of staple is not the great excellence it was thought to be a few years ago. A heavier fleece and a better character of wool can be obtained with a medium staple than with a very long one. With wool of moderate length the density of the fleece is more easily maintained than with an extremely long staple. A defect that is often found, even in flocks of some standing, is called "Devil's Grip." It is a patch on each side of the body, just behind the shoulder, where the

wool grows in an unwholesome condition: it is divided into small curly locks, has a furry appearance, and a hard black tip. This defect is the result of careless breeding, and shows an inferior type. All ewes showing indication of "Devil's Grip" should be got rid of. Any falling off in density of wool along the back should be carefully guarded against by rejecting animals showing weakness in that part of the fleece. It is a very serious defect in the warmer parts of Australia. The Argentine Republic promises to prove a formidable competitor to Australia in producing medium wools; therefore it is necessary the Australian sheep-farmers should pay great attention to keeping up the quality of their wool. I believe Australia will produce brighter and softer wool than any other part of the world; therefore to neglect quality would be a great mistake. It must be borne in mind, however, that fine wool and weak wool are not synonymous terms. I have seen sheep bearing the highest quality of wool that for robustness of constitution could not be surpassed. That beautiful ram, "Magenta," bred by Mr. D. Taylor, is an instance of the very highest quality of wool combined with splendid constitution. When 8 or 9 years old he was sold by auction in Sydney for 205 guineas to go back to Tasmania.

It is rather an odd coincidence that, while any sheep-farmer is able to distinguish between wool and hair, it is extremely difficult to give a definition that will cover the difference between them. On this subject Mr. F. H. Bowman says*:—"They have almost identically the same chemical composition, and, to the unpractised eye,

* "The Structure of the Wool Fibre."

they are almost equally difficult to distinguish by their mechanical structure, because the fine hair in some animals is very like wool, and the coarse wool on others closely resembles hair. . . . Although no definition of the difference between them is quite possible, those who are accustomed to work amongst wool have no difficulty in practically telling the difference. The true distinction between wool and hair, indeed, seems to be principally in the way the scales on the surface of the fibre are attached to the body of the fibre, or rather to the cellular mass of the fibre which lies immediately beneath them. . . . The fibre of true wool is always covered with numerous lorications or scales, the upper extremities of which are pointed rather than rounded in form. The scales also have a much larger free margin than in the case of hair, being only attached for about one-third of their length, and in many cases the free ends are more or less turned outwards, so that they present a much more serrated or denticulated edge. The interior portion of the fibre, however, differs in no respect from hair, and cannot be distinguished from it."

SHEARING.—On large pastoral properties there are always proper conveniences for shearing the sheep, and it is in this operation that the agriculturist who keeps a small flock is often placed at a disadvantage. He is often obliged to make use of a barn or shed, and the result is that particles of straw or chaff are apt to get mixed up with the wool and thereby cause a considerable reduction in its value. I have often thought it would be worth while for a number of farmers to co-operate and erect a building in a central

position to serve them all as a shearing shed. In order to avoid disputes they might draw lots to regulate the order in which the various flocks should be shorn. It is a heavy tax on a farmer who, perhaps, has not more than 300 sheep, to erect a shed, however small, in which to shear them; but the cost of a well-arranged small wool-shed, situated in a field of 20 or 30 acres, would be scarcely felt if divided among a score or so of farmers. The place might be purchased by the subscribers, and the right to the use of the shed go with the farms.

In preparing the fleece for the market the dags and stained pieces of wool should be first removed, then the bellies should be taken off and placed in a separate package, and the breeches and coarse pieces should be also packed separately. Unless this is properly done it would be better to pack the whole fleece after the dags and stained pieces have been removed. Skirting a fleece is easy work, and can be learned by any person of ordinary intelligence in a short time. There is no necessity to employ an expert to do the work.

The following rules for handling and sorting fleeces were read by Mr. J. S. Hermann Schmidt, in a lecture delivered by him several years ago, under the auspices of the Queensland National Association:—

“(1). Broken fleeces should be kept separate; no broken fleece or part thereof should be rolled up in an unbroken one.

“(2). Fleeces that keep well together should be spread out on a screen, the cut end below, and skirted. Skirting means separating those parts from the fleece that are useless to the spinner, such as cotty, matted, curly, kempy, stained, and seedy parts. All this, however,

ought not to exceed a tenth of the whole fleece on an average. Every bit which is of a healthy growth ought to remain with the fleece, though it may be somewhat coarser in fibre than the rest.

“(3). If the wool is of a different description, a division into several classes will be necessary. This sorting means nothing else than a proper arranging of certain descriptions, in order to realize a better sale of them. It is by no means intended to substitute the wool-sorting of the manufacturer, who is obliged to sort all the wool again, according to the kind of yarns which he has to spin. This is the reason why, in most cases, a simple way of sorting answers far better than a complicated one. It will generally be sufficient to make the following classes:—1, combing; 2, fine clothing; 3, stout clothing; 4, broken; 5, faulty (matted, curly, yellow, and stained fleeces), pieces, locks, screenings. In large clips it may be advantageous to make a further division.”

These rules were suggested to Mr. Schmidt by Mr. H. Schwartz, Messrs. Symes and Co., and other gentlemen engaged in the wool trade, and, therefore, they are worthy of consideration, though they differ somewhat from the usual practice in Australian wool-sheds. The greatest caution should be observed in packing the wool to see that it is perfectly dry.

There has been considerable diversity of opinion among sheep-farmers as to the relative advantages of shearing in the grease or washing the sheep. Accurately conducted experiments have been made by the owners of well-known flocks, and yet the subject is as much in doubt as ever. Mr. Thos. Shaw, of Worriwyrite,

Victoria, divided 4,372 full-mouthed wethers; one lot was washed and the other was shorn in the grease. The wool was sold on the same day in London, with this result, that the washed wool gave a return of 8s. 0 $\frac{3}{4}$ d. per head, and the greasy wool gave 8s. 3 $\frac{1}{4}$ d. per head; the extra cost of carriage of the greasy wool was put against the expense of washing. It must be added that the washed wool was not so well got up as usual, and the London agents said the greasy wool sold at a fancy price, namely, 1s. 7d. per lb.; but as the greasy wool of the preceding year sold at 1s. 9 $\frac{3}{4}$ d. per lb., the remark of the agents has not much force. In 1878 Mr. A. Lucian Faithful, of Springfield, New South Wales, drafted off and weaned 3,527 ewe and wether lambs. They were kept in one paddock till shearing time, when 1,786 were run off and thoroughly spout washed. The remaining 1,241 were shorn in the grease. Nothing was taken off the fleeces of either lot except stained pieces and dags. Both lots of wool were sold by auction the same day in London. The washed wool realized 6s. 1 $\frac{1}{2}$ d. per sheep, while the average of the greasy wool was 5s. 8 $\frac{3}{4}$ d. per sheep. The greasy wool had a black tip, which would tell against it. It will probably be found advisable with large flocks, having a high quality of wool, to wash the sheep, particularly if the water is soft and the appliances are good, but for the small sheep-farmer it is decidedly preferable to shear in the grease. There is a condition attached to washing sheep that is seldom taken into consideration, and that is the number of deaths that take place after the washing. Even with the greatest care sheep will drown in the wash-pen, and many who do not die are much injured. Then there is the comfort of

shearing in the grease as compared with washing the flock. In the former case the shearing is got through with scarcely any trouble, while in washing the sheep there is the difficulty of getting the wool snow white and afterwards of keeping it so. The slightest tinge of dust or smut from the grass is sufficient to lower the price several pence per lb., while the added weight is infinitesimal.

The excellent shearing machine invented by Mr. F. Y. Wolseley, which is now being pretty extensively used throughout Australia, will prove a great boon to sheep-farmers, as it will, I believe, relieve them from the tyranny of the shearers. With this machine any workman of ordinary intelligence can learn to shear sheep in a day, and while he is learning he cannot injure the sheep by cutting them as he would do if he learned with ordinary shears. The wool is taken off the sheep in better form than when done with shears, and when all bush workmen learn to use Wolseley machines the functions of the Shearers' Union, with its lazy crew of mischief-makers, who, under the pretext of looking after the interests of the men, foster discontent in every shed they visit, will be at an end. In time shearing will become no more the work of a skilled workman than harvesting a crop now is with the reaper and binder.

OVERSTOCKING.—The most fatal mistake that can be made in sheep husbandry is overstocking, which is, unfortunately, but too commonly practised by Australian flock-masters. The prevailing idea seems to be that increasing the number of sheep on the land will lead to a consequent increase of profit. Unless some provision be made in the way of a store of fodder for the increased

number, the inevitable result will be loss and disappointment. A half-starved sheep cannot grow a strong, healthy fleece of wool, and even if a greater weight of clip be obtained from the larger number of sheep the price per lb. will show a considerable falling off, while the injury done by stunting the growth of the young stock will tell on the flock for many years. Overstocking will cause a more rapid degeneracy in the flock than any other kind of mismanagement. In ordinary times overstocking is bad enough, but in a time of severe drought the spectacle of a crowded sheep-walk is most distressing. On such occasions immense numbers of sheep are lost. I have heard an estimate, made by one well qualified to express an opinion, that during the last three years' drought the loss of sheep in Queensland and New South Wales exceeded twenty millions. The occupants of the vast pasture lands of Australia have spent large sums of money in the endeavour to provide an ample supply of water for their flocks, and where this is secured overstocking is unfortunately but too commonly practised. In Central Australia dry seasons are the rule and seasons of good rainfall the exception, but, dry as the climate is, sheep will thrive well in it if not overcrowded. Some of the most experienced stockowners in the hot plains of the interior attributed all the misfortunes of the flock-masters in that country to overstocking alone.

WATER SUPPLY.—There is no matter of greater importance on a stock farm than the securing of an ample supply of water. In such a dry climate as that of Australia, springs are few, and running streams are still more seldom met with, while over a large

area of the country the silt brought down by the floods is filling up the waterholes in the creeks. Water is provided for stock by sinking wells and forming dams and tanks, and each mode of supply has its advantages, according to the locality. On the flat plains of Central Australia an immense amount of work has been done in excavating tanks, many of which are of immense size. Owing to the skill shown by the stockowners in this thirsty land, water has been secured in sufficient quantities to permit the country being stocked with sheep, and what was almost a desert has been made a valuable pastoral district. The tanks in this great central plain have answered the purpose for which they were made exceedingly well—indeed, without them the country could not be occupied. The ordinary plan of allowing the sheep to have access to the tank is a wasteful one. A large quantity of water is removed in the wool, the water is rendered foul, and much wool is rotted. Mr. T. F. Cumming told me that on his station, in Central Australia, he divided 16,000 sheep into two equal portions, which were placed in two adjoining paddocks. In one paddock the sheep were watered from troughs, and in the other they had access to the tanks. At shearing time there was a difference of 7 ozs. of wool in favour of the sheep watered at the troughs; while the water lasted much longer and was much cleaner than in the paddock where the sheep had access to the tanks. Dam-making is too well understood to require any description. All that is necessary is to choose a site where the soil is holding and to puddle the dam well in making. Where the watercourse to be dammed is liable to sudden floods the plan adopted in Queensland

of making what are called overshot dams is a good one. The centre of the dam is lower than the sides, and the surface is laid with flat stones, often overlapping one another like shingles. A flood will pass over these dams without doing much damage. Sinking wells is practised in many places, but unfortunately the water obtained is often much saltier than that of the sea. Where fresh water is struck in a well, a windmill pump is the best and cheapest mode of raising water to the surface. There is scarcely a stock farm in Australia but would be benefited by the employment of these most useful machines. The plan of sinking for water by means of the rock-boring apparatus, in use in America for boring for oil, has of late come into notice in Australia. By means of this machinery the deep-lying water-bearing strata can be tapped, and a strong supply of water obtained at depths varying up to 1,000 feet from the surface. The greater portion of Central Australia will, I believe, be watered by means of wells sunk by boring machines. The drainage of more than two-thirds of the area of the great island is to the south, and by far the greater portion of the storm water finds its way slowly to the sea by underground channels. In time the course of these channels will be as well known as the surface watercourses, and they will be marked by the presence of long lines of tube wells, giving an unfailing supply of water for the stock. The brilliant successes that have already been achieved are sufficient to ensure a thorough trial being made of this plan of sinking for water throughout the central portion of Australia.

BREEDING FOR MUTTON.—When longwools or Down sheep are bred, form and size are of greater importance

than fleece. But even with the mutton breeds wool is an important consideration. Weight of fleece, evenness, and quality must be as carefully studied as form and size. The Down sheep will be found better than any other breed for raising lambs for market. It will depend on the soil and climate which breed of sheep will prove most profitable. With a rich soil and heavy rainfall, the pastures will be better fitted for Lincolns than any other breed. The former grow to a very large size and yield a very heavy fleece; 30 lbs. of wool have been frequently cut by a Lincoln ram. It is better to fatten off all longwool wethers before they are four-tooth. After that age they are too apt to develop an inordinate quantity of fat. On good pasture, but with a somewhat drier soil Leicesters and Cotswolds answer very well. Where the soil is very wet and the climate severe, the Romneys are the only sheep that can be reared. They are a much more useful sheep than is generally supposed. I have seen some very well-shaped Romneys in New Zealand, where they are used to breed crossbreds for stocking the bleak, hilly country in the Southland Province. It is evident that any of the Down or longwool breeds of sheep are more suitable for supplying the London market with mutton than is the merino. A test experiment was made by Mr. J. L. Currie, of Larra, Victoria, about two years ago, the result of which he communicated to the *Australasian*. Mr. Currie killed a couple of prime merino wethers and sent them to England to be compared with the best Scotch mutton. The result was not favourable to the Victorian sheep. The proportion of lean (eatable meat) to pure fat in the Scotch sheep was about two to one, whereas

in Mr. Currie's sheep it was about one-third lean to two-thirds fat. It may be mentioned that Mr. Currie's wethers are considered among the very finest merinos that come into the Melbourne market. From the result of this experiment it would appear that the merino is more a wool than a mutton sheep. When the European market is looked to by the sheep-breeder, longwools, Downs, crossbreds, and comebacks will prove more profitable than the merino. The term comeback is used to describe sheep that have two crosses of merino blood to one of longwool. They are extremely profitable animals to breed, being of large size, with heavy fleeces of excellent wool that is valued as highly as many brands of merino wool. Whatever breed of sheep is chosen this should be borne in mind: it does not pay to keep good sheep badly, and it is a waste of time and fodder to keep bad sheep at all.

FENCES.—The first requisite on a grazing farm is, that it should be securely fenced, and of the many fences I have seen in use I like wire netting better than any other. It is a bar to the plague of rabbits with which the whole of Australia seems to be threatened, and it is, I believe, the only fence that will keep in longwool sheep. If the majority of the fences were made of this material there would be no damage done by rabbits, save on the lands of those negligent proprietors who do not take measures to destroy them. Mr. Alex. Wilson, of Mount Emu, Victoria, in a letter to the *Ballarat Star*, August, 1884, recommends the following description of fence, which has proved thoroughly rabbit-proof on his estate. The posts to be placed 15 feet apart, with one top barbed wire, which will make the fence cattle-proof, strong galvanized wire

netting of $1\frac{1}{2}$ -inch mesh to be stapled to the posts 3 feet from the ground, and 6 inches of the netting to be laid flat on the ground and stapled firmly down. I saw wire netting used as a ring fence on an estate in a rabbit-infested district in New Zealand, and it answered the purpose admirably. Outside the fence the rabbits were swarming, while inside not a rabbit was to be seen. In this fence the netting was sunk 6 inches into the ground. This plan is, I think, better than stapling the netting on the surface. In putting up an ordinary wire fence many posts may be saved by running the wires through a couple of laths between the posts, which are set twice the ordinary distance apart. The laths should not touch the ground. This plan is much in favour in the great plains of South America, where timber is extremely scarce. The posts in a wire fence should be so placed that the wire will run freely through the holes. When the posts are set crooked there is a useless strain on the wire. Where dingoes or stray dogs abound and rabbits are plentiful, the best fence that can be erected is certainly that adopted by Mr. E. H. Lascelles on his sheep run in the dingo and rabbit infested mallee country. In this fence the posts are set 50 yards apart, and between each post are seven stakes driven 15 inches into the ground. Three-foot wire netting, $1\frac{1}{2}$ -inch mesh, is set 4 inches in the ground and stapled to the posts and stakes. A barbed wire is run 4 inches above the top of the netting, a plain wire 6 inches above that, with another barbed wire 7 inches above the plain wire, thus making a fence 4 feet 1 inch above ground. Five wire braces are run between the stakes, which tie the three wires to the top of the netting. This fence has proved

perfectly dog and rabbit proof. I have heard it recommended to set the post in the ground opposite to the growth of the wood. It is claimed that this would make the posts last as long again, but I have never known an instance of this plan being tried. In the *Texas Wool Journal*, 17th March, 1883, the following plan is recommended for making wood resist the action of water. The cost of preparation is small. This is the plan:—“Take boiled linseed oil and stir in it pulverized coal to the consistency of paint. Put a coat of this over the timber and there is not a man who will live to see it rot.”

An ingenious mode of fence-making has been patented by Mr. Lyons, of Avonvale, near Kyneton. By his plan mortising the posts is done away with. The posts are smoothed with an adze, and the rails are fixed one on one side and one on the other. Both rails are bound by a loop of wire passed through two small auger holes bored through the post. The loop encloses the rails, and is tightened by twitching. As the loop is set diagonally it acts as a binder on the post and prevents it splitting. The rails are fastened on the inside of one post and on the outside of the next. This fence is a cheap one; the posts do not require to be so large as when they are mortised; it can be rapidly erected and it is easily repaired.

Another excellent fence for sheep is one I met with on the Yandilla estate, Darling Downs, where it has been in use for about five years, and has given every satisfaction. It consists of a 2-foot wire netting, 16 gauge of wire and 4-inch mesh. The posts were set every 12 feet, and a wire was run along the top and bottom of the

netting. This netting was landed in Brisbane at £7 15s. per mile. Mr. F. A. Gore, of Yandilla, estimated the cost of erecting this fence at £12 per mile. A black wire and barbed wire above the netting makes this a safe fence for all stock.

All descriptions of log and brush fences are unfit for permanent enclosure. They are at best only makeshifts. Except in a few localities live fences are scarcely ever seen in Australia, though there are many parts where they can be successfully grown. In some portions of Riverina boxthorn and Osage orange grow so freely they might be employed as hedge plants. They would serve to protect the sheep from the keen blasts of winter, which sweep with great force across this open country. Owing to the exhaustion caused by the long summer the sheep suffer greatly if a sudden change of weather occurs, with a drop of 30 or 40 degrees of temperature. After a drought a cold storm of wind and rain will often kill more sheep than six months of heat and starvation. At such a time the shelter of a hedge would save a great many of the unfortunate creatures. Gorse and briar should never be used as hedge plants. They both spread rapidly, and having once taken possession of the ground are extremely difficult to eradicate. Many fine farms in Tasmania have been destroyed by the briar, and the plant is spreading greatly in some places in New South Wales and Victoria. Hawthorn makes a most beautiful hedge, but there are few localities in Australia where the climate is sufficiently moist to grow it well enough for a hedge plant. Lines of trees may be utilized for fencing. I have seen olive and almond trees bored and wires run through the trunks without doing the slightest injury

to the trees, which gave heavy crops of fruit. Lines of trees may be planted with the view of utilizing them for fencing posts. An excellent fence for the temporary division of a large paddock is made in the following manner:—Five strands of No. 14 wire are run on iron standards 1 inch broad by $\frac{3}{16}$ of an inch thick and 5 feet long. These standards are placed 9 feet apart. Wooden straining posts are set 300 yards apart. When the wires are strained the standards are set in the ground and the paddock is divided by a sheep-proof wire fence. When it is desired to give the sheep the whole of the paddock the standards are lifted out of the ground and laid flat. The sheep pass over the fence without doing it any injury. If it is desired to re-erect the fence, the standards are lifted, set into the old holes, and the tap of a mallet makes all secure. I saw this fence in use at Balgownie, on the Darling Downs, and it seemed to answer the purpose for which it was made very well.

PLANTATIONS.—Planting trees in lines across the prevailing wind, and in clumps, will be of great benefit to the pastures and to the stock. In this respect South Australia is far in advance of the other colonies, having established a forest department which, though it has been only a short time in existence, has yet done an immense amount of good work. I endeavoured this year to get “Arbor day” established in Victoria, but without success. In South Australia the idea was at once adopted, and the first “Arbor day” in these colonies was held in South Australia, 20th June, 1889. In the Western District of Victoria large plantations have been made, which have proved extremely beneficial to the stock. The plantations not only provide a shelter from the cold winds, but the

grass grows much better for a considerable distance on the lee side. They also provide a safe harbour for small birds that serve to keep down the myriads of insects which infest the greater portion of Australia. The tree mostly used in Victoria is the Tasmanian blue gum (*Eucalyptus globulus*). In many places in the interior this tree will not grow, but the pepper tree is even a better shelter, and it fairly revels in the heat. I have seen the Osage orange tried as a tree with some success. Over the box-forest country the elm and the plane will flourish. The *Palownia imperialis* grows well in many warm districts. Near the coast the *Cupressis Lambertiana* is an admirable shelter tree, and if planted closely it yields excellent timber.

SHEEP YARDS.—Sheep yards vary greatly, according to the requirements of the locality, the size of the flock, and whether sheep are fattened for the market or a permanent flock is kept. Where much dealing is done, and large numbers of sheep are passed through every year, the best description of yard is wanted. Specimens of such sheep-yards can be seen on almost every large pastoral estate. Therefore, there is no need for me to describe one. With a small flock, almost any sort of yard will answer, provided it is on sound ground. In the yard as elsewhere the sheep should be taken quietly, and the less the dog is used the better. Indeed, on a farm the sheep should never be put into a yard if it can be avoided. With good fences there is seldom any necessity for using a drafting yard. I had a large flock of sheep at Mount Emu, and the drafting yard was regarded as the worst in the district. By taking the sheep quietly we were able to draft them as well as

where they had most elaborate yards. On the large central Australian sheep-walks good yards are required, as often very large mobs of sheep are drafted. On the small sheep-walk there is very little drafting to be done.

DOGS.—I love a good dog as well as anyone, but I have seen so much mischief done by them that I sympathize with those sheep-farmers who poison or shoot every stray dog they find in their paddocks. In many districts of Australia it is out of the question to attempt to keep sheep on small properties, owing to the number of dogs that prowl over the country during the night. In this respect the small farmers are the greatest offenders. Keeping no sheep themselves, they usually have a pack of half-starved curs that roam abroad at night in search of food. The thrifty farmer's little lot of sheep are entirely at the mercy of these dogs and there is no remedy, for they are so cunning they always reach their homes before daylight. Until lately it was thought that a sheep-farmer was not entitled to kill dogs he found hunting his stock. In July, 1884, a case was heard in the County Court, Melbourne, in which a Mr. Nolan sued the late Mr. Graham Mitchell, V.S., for £20 damages, being the value of two greyhounds shot by him. The dogs were worrying a calf belonging to the defendant and he shot them both. Judge Cope considered Mr. Mitchell was perfectly justified in what he did, and gave a verdict for the defendant with £6 8s. 6d. costs. The depredations committed by wild and tame dogs are much greater than is generally supposed. In New South Wales, in 1888, there were 65,488 sheep, valued at £17,410, killed by dingoes, and 52,332 sheep, valued at £16,638, killed by

tame dogs. I feel satisfied that tame dogs kill a proportionate number of sheep in Victoria and South Australia. The mischief done by tame dogs is quite as great in America. So heavy are the losses caused by dogs worrying sheep that an American gentleman (Mr. T. D. Coburn), writing on the subject in the *American Agriculturist*, makes the following pregnant remarks:—"So many and of such frequent occurrence are their atrocities that not a few thoughtful men are propounding the query if it would not be better for humanity if the entire canine race were to become extinct." This gentleman states that as long ago as 1868 the Commissioner of Agriculture estimated the direct losses at one million dollars in wool and mutton, and the indirect loss in preventing sheep industry, especially in the South, at double that sum annually. He concludes by expressing a hope that "the day will come when valueless curs will not be permitted to exist as a stumbling block to one of the most profitable and pleasurable branches of rural husbandry. The rearing of better classes of sheep always indicates a high state of civilization, where intelligence, comfort, and competence abound, and no more unfailing sign of ignorance, squalor, and poverty can be manifested than the presence of a varied and increasing assortment of fleabitten curs, unclean and of low degree." Mischief caused by stray dogs has been greatly increased during the last ten years by the presence of hares in our fields. I would recommend all landowners to wage a war of extermination against hares, so as to give no excuse for the maintenance of those packs of lurchers kept by the idle and dissolute throughout the country for what they falsely call sport. Even the sheep dog in nine cases out

of ten does more harm than good. Owners of small flocks should so treat their sheep that they can move them from one part of the farm to another without the assistance of a dog. This is constantly done in Europe, but I have only seen it practised in one flock in the colonies, and that was on Mr. G. E. Sise's farm, near Dunedin, New Zealand. These sheep followed the shepherd with the greatest confidence, and, when in the yard, stood to be handled as quietly as so many pets. The following dog trap, made by a Virginian (U.S.A.) sheep-farmer, is said to have proved a great success. He built round a number of sheep that dogs had killed an enclosure of rails 12 feet high and about 10 feet square at the ground, the sides of the trap sloping inwards until an opening was left about 5 feet square. Any dog could easily climb such a fence and enter the pen, but not even a greyhound could jump out of it. In three nights this farmer caught 46 dogs in his trap. In working my own flock I seldom used a dog, and I have heard it said that Messrs. T. and S. Learmonth, of Ercildoune, would not allow dogs to be used on their sheep. On the Havilah estate no dogs are used, and, while going through the paddocks, I was struck by the quietness of the sheep. In Tasmania, where they have the finest sheep dogs in the world, the sheep, even the studs, are remarkably wild. Tasmanian sheep-farmers say they could not muster their sheep without the aid of dogs, but the manager at Havilah, Mr. P. Hunt, musters the sheep on high, steep hills without their aid. A few years ago Messrs. Cox Bros., of Rawden, N.S.W., lost their finest stud ram, a sheep that could not be replaced, through being worried by tame dogs. At Terrinallum stray

dogs in one night killed a champion ewe, a second prize 4-tooth ewe, and several of the finest of the season's ram lambs. In South Australia many meetings have been held by flock-masters with the view of devising some means of abating the dog nuisance, and in Victoria the sheep-farmers suffer constant losses through stray curs being permitted to roam about the country. It is very little consolation for a sheep-farmer to be told that it is an old complaint. Sheep-killing dogs were a terror to farmers for a long time past in the old country, as we learn from Robt. Greene's poetical effusion "Happy as a King," which was published in the *Gentleman's Magazine*, September, 1792, from which I cull the following verse:—

"Alas! a shepherd sleeps not half his fill—
His rest is broken by dreadful howlings shrill
Of savage dogs.
He seeks the lea and finds his lambs destroyed,
His fences broke and ewes full sore annoyed.
Ah then! Ah then!"

Many an Australian sheep-farmer has "slept not half his fill" at lambing time, and, with all his watchfulness, has not been able to save his sheep from the vagabond dogs of the neighbourhood.

It is a common custom for the shepherd when he looks through the sheep grazing in a paddock to send his dog round the flock and bring them racing up to him, instead of walking quietly through the flock and noticing if any were ill. Ewes in lamb should never have the dog put on them under any circumstances. If the number of ewes that have cast their lambs through useless dogging

could be ascertained it would rather surprise most sheep-farmers.

THE PASTURE.—The exhaustion of the soil by constantly grazing sheep thereon was the subject of much discussion a few years ago. Many seemingly excellent and scientific arguments were brought forward in support of the theory that the pastures in the Western District of Victoria had deteriorated, owing to long-continued stocking with sheep. I happened to know the country well, since soon after it was taken up as a sheep-walk, and at the very time it was argued that the pasture had deteriorated, I could say of my own knowledge that it was carrying fully four times the number of sheep that it would support for the first ten years after sheep were put upon it. In Europe sheep are grazed on worn-out land to bring it back into a condition of fertility.

Improving the pastures by laying down the land in European grasses and pasture plants has not been much practised in Australia. Over an immense area of the island continent any attempt to replace the native pastures by foreign fodder plants would have a most disastrous effect. In those portions where the temperature is mild and the rainfall ample, the European grasses and clovers thrive well. Among the grasses used on pasture lands rye-grass and cocksfoot have been most in favour. A few experiments have been made with timothy in the Gippsland hills, where the rainfall is heavy, and the result is said to be satisfactory. Meadow foxtail I have found give excellent results on an estate in the Western District of Victoria. It might almost be said that any other grasses than those mentioned are

unknown in Australia. Where the soil and climate are suitable the clovers grow well. White clover springs up so quickly in the reclaimed swamps of Gippsland that many people think it is indigenous.

Lucerne is the great fodder plant of Australia. It likes heat and deep soil, and wherever moisture can be applied to it lucerne is the most profitable plant to grow. Its value is now only becoming known to Australian husbandmen, but it is advancing rapidly to the front rank. I have seen it grown on many farms and estates from the tropics to the Southern Coast, and everywhere it has given the greatest satisfaction. On the great plains of Central Australia it is unlikely there will ever be any attempt made to replace the natural pasture by any foreign plants, but on the rich river flats, where it is possible to give the ground at least one good watering a year, lucerne will be extensively grown. One foreign plant that has established itself over the greater portion of Australia is the clover burr. It was for a long time regarded by flock-masters with disfavour, as the burrs injured the market value of the wool. It has been found, however, that the plant is a most valuable one to help a flock of sheep through a severe drought. In times of scarcity the sheep eat up the burrs, which are plentifully strewn on the ground, and so much sustenance is there in the seed that fat wethers will keep up their condition on them alone for several months.

Sheep, and particularly merino sheep, like a change of pasture, and a removal from one field to another occasionally will be beneficial. Where there are coarse grasses in the pastures it is a good plan to keep a few head of cattle in each paddock. The best cattle for this

purpose are the Devons. They are as hardy as any other breed, and manage to pick up a living where larger framed animals would starve. The flock should be always supplied with salt. If they do not want it they will not take it, but they should have the option. An old sheep-breeder in New South Wales told me he had for many years given his sheep the following mixture with great advantage—namely, 214 lbs. salt, 14 lbs. sulphate of iron, 4 lbs. sulphur, and 2 lbs. ginger. It acts as a tonic, and keeps the sheep in excellent health.

WEEDS.—The natural pastures of Australia are so excellent for stock feeding that it would be a great misfortune if by any negligence on the part of the land-owners they became overrun with noxious weeds. There is so much traffic throughout the world now-a-days that the seeds of plants growing in one country are very easily carried to another. Of this we have an excellent illustration in the Bathurst burr and trefoil burr, which were brought from South America in the tails of some Valparaiso horses, and now both plants are found over such a large area of the colonies that most people imagine they are indigenous. It is necessary to carefully watch any new plant that is seen growing vigorously in the pastures. That vigorous growth is against it. If the plant is a good fodder for stock it would not be allowed to grow so rankly. A new plant neglected for a year or two may become so firmly established that it will be almost impossible to eradicate it. In Tasmania the gorse and briar, once used as hedge plants, have, in many instances, invaded the fields they were designed to enclose. The Scotch and variegated thistles have been given a worse name than they deserve. Many thousands

of sheep have been kept alive in bad seasons by a good crop of them.

Two new thistles that have appeared in our pastures of late are *Centaurea solstitialis* (yellow flowering) and *Centaurea calcitrapa* (purple flowering), or star thistle. They are both noxious weeds, and they seed so freely that they soon spread over a large area. The star thistle has long been known in England as a bad weed, and the *Centaurea solstitialis* has given no end of trouble to the graziers in the Southern States, U.S.A. The prickly pear in Queensland is an instance of a plant, neglected for a few years, becoming a great nuisance. On the Darling Downs this plant is giving much trouble, and how to check its encroachments is a problem the land-owners in that district find some difficulty in solving. The lobelia is a small plant with a blue flower that is very common in Victoria. Stock will not eat it unless driven to it by starvation. It grows in slight hollows in the surface and is plentiful in autumn. Cattle and sheep emaciated by long starvation are often poisoned by it. Where it is very plentiful the best plan is to scarify or plough it up. By avoiding overstocking there will be few deaths in the flock from lobelia poison.

In South Australia the plant called the stinkwort has overrun the cultivated fields, and is now spreading over the grass lands. It is a most useless weed, for nothing will eat it, and, as it withstands the heat of summer, it is difficult to get rid of.

I feel satisfied that we have in the "Scrub Exterminator" an agent that will effectually relieve the pastures and arable lands of most noxious weeds.

A little attention on the appearance of an intruder will often save a world of after trouble. The exterminator is easily applied, is not dangerous to handle, is rapid in its action, very effective, and, to crown all, it is not expensive.

FIRES.—The destruction of live stock, fencing, and pasture by bush fires is often very great in almost every portion of Australia, and the regret for those who suffer from bush fires is rendered all the more acute from the fact that in nine out of ten cases the disasters might have been prevented had proper precautions been taken. Often when travelling through Australia I have seen a heavy crop of grass, with summer coming on, and not an attempt made to create a barrier to the progress of a bush fire. In the old squatting days, when sheep were shepherded, careful stockowners used to burn a broad strip round their runs, and often the run was divided into several sections by bands of burnt grass. On that fearful day, Black Thursday, I had a proof of the wisdom of burning round a run that I never forgot. My uncle's station at Mt. Elephant was situated in the centre of the great western plain of Victoria. The fierce north wind was bringing down an enormous body of fire that, but for the forethought of my uncle in burning a strip round his run, would have swept the property of every blade of grass, and probably have killed half his flock. Owing to his precaution he did not loose a single sheep or an acre of grass. Some years ago it was the custom to plough a few furrows on each side of a boundary fence, about 60 or 80 yards apart, and burn between. This is an excellent plan, and should be adopted wherever it is possible. I have noticed of late that the

marks of the old furrows are now overrun with grass, a few years immunity from fires having evidently caused many to neglect those precautions which alone ensure safety. The most neglectful of all are those who would suffer most from a bush fire, namely, the small proprietors. By burning strips round each property a fire is prevented from attaining those proportions when it becomes unmanageable. I practised the plan of burning round and subdividing my run with strips of burnt land, and was thereby saved from many a serious loss. I found the best time to burn was in the evening, when the grass burned slowly. Under a hot sun much more work can be done, but the fire is apt to get away, and it does not burn clean. A fierce fire pretty early in the season—and that is the time one must burn to do any good—will sometimes leave sufficient grass on the ground for a second fire to run across. For beating out the fire I used stout saplings, from 6 to 8 feet long, with a gunny bag or shorn sheepskin fastened to one end. We always took the men out to work in an American waggon and had plenty of water to soak the bags. The cost of burning strips round any property is a very small premium to pay against loss by bush fires. It is possible that after all one's care in burning round a grazing farm one may be burned out, but it is not likely to happen.

FEEDING SHEEP.—If I judge the times aright, the mode of feeding stock will, in the near future, assume a very different aspect to what it has done in the past. Already in many localities in the older settled portions of New South Wales and Victoria the change has begun. The stockowner who breeds and feeds for market will naturally conclude that it is to his interest that the

shortest possible time should be given to the growth of an animal intended for food. Early maturity will therefore be his study, and this is best attained by selecting the breeding stock from those animals having the most pronounced tendency that way, and this tendency can be developed only by good feeding. The English breeds of sheep exhibit a greater tendency to early maturity than the merino. It is not necessary to tell any sheep-farmer that it is a waste of time and money attempting to rear lambs for the market from underfed ewes. In breeding for the market, either for lambs or fat sheep, the advice contained in the old saying should be steadily borne in mind, "Never loose the calf fat." On this subject Mr. Elliott W. Stewart says * :—"While the animal is young and in an active stage of growth the percentage of waste in its system is much less than at and after maturity. . . . It must be evident that in careless and unskilful feeding the cost of simply supplying the waste of the system during four years' feeding of steers will be as great as to produce animals of the same weight at 24 or 30 months, or in other words skilful feeding of young animals will produce twice as much weight at 24 as at 48 months on the same food." The advantage of feeding sheep over cattle is that the former have been proved by experiment to store up in increased weight 12 per cent. of the dry food consumed, while in cattle the increase is only at the rate of 8 per cent.

Only a few years ago anyone advocating growing fodder for sheep would have been laughed at by the majority of Australian sheep-owners. Now that the agriculturists have taken to rearing and fattening sheep

* "Feeding Animals."

the idea of growing fodder for sheep is beginning to be regarded with favour, especially since growing cereals has become scarcely remunerative. Over a large area of the settled portion of Australia the following crops can be grown:—Wheat, oats, barley, rye, maize, sorghum, millet, peas, pumpkins, vetches, rape, and last, but not least, lucerne, the best of all fodder crops. In districts having good rainfall mangels, prairie grass, turnips, cabbage, carrots, potatoes, and many other crops, can be grown in addition to the above. Sheep's burnet is strongly recommended by some northern flock-masters as a plant that will endure drought and yield a good crop of fodder in sandy soil.

Following on the growing of fodder comes the mode in which it is to be given to the stock, and in this respect the greatest results appear to have been obtained from cutting up and cooking it. The following illustration of the benefit to be derived from feeding stock on well-divided and cooked food is given by Mr. E. W. Stewart:—"The late Mr. Arvine C. Wales, of Mascillon, Ohio, divided a lot of 300 sheep equally. One portion was put in a shed and fed liberally on clover, hay, and sheaf oats. The other portion was also placed in a shed and fed on cut fodder, corn, and wheat bran. Seventy-five pounds of bran were mixed with one day's feed of fodder corn, and all wet down with boiling water. Both lots of sheep were weighed at the commencement, and frequently during the eight weeks the experiment lasted. Mr. Wales does not give the weights, but he says:—"They were so interesting to me and so satisfactory as to seem to warrant the purchase of an engine and boiler, and the putting up of

tanks and conveniences on a scale adequate to the wants of the flock. Since then I have fed on cooked food almost exclusively. Last winter, owing to the failure of the hay crop, I kept over my entire stock, consisting of 20 horses, 20 head of cattle, and between 1,600 and 1,700 sheep, without a pound of hay, and they came into spring in better condition than they have ever done on dry feed." The following is his statement as to the cost of steaming. The stock fed required about three tons of dry feed per day. "The cutting was so arranged that the feed as cut was carried to tanks, wetted with the necessary quantity of water, and mixed with bran or meal by machinery, so that when the cutting was done the feed was ready for the steam. The feed was cut by three men in an hour and a half, and it took one man four hours more to steam it. The cost of fuel for cutting, mixing, steaming, pumping water, &c., was about five cents per ton of dry feed. A couple of two-bushel baskets were used, and while the feeder was carrying one to the racks a boy filled the other. In this way a man and a boy could feed and care for 1,500 sheep." Mr. Stewart says:—"Cutting up and cooking does not add to the nutritive elements of the feed, but they make it more palatable and more readily digested by the stock." With our climate such a style of feeding is not likely to come into general use, but the plan adopted by Mr. Wales might be followed with advantage in studs of cattle and draught horses. Feeding stock on what is called artificial food is steadily gaining ground in many portions of Australia, and in this branch of live stock husbandry the agriculturist must show the way. I feel perfectly

satisfied that it will pay the farmer better to grow food for feeding live stock than to produce grain at the present rates. In several districts in Victoria rape is grown for fattening sheep for the market, and the results are so satisfactory that the practice is steadily increasing.

THE SILO AND SILAGE.—The most important change in the feeding of stock made in modern times has been the employment of the silo as a means of preserving green fodder. Though the use of the silo is said to date back over 2,000 years, and has certainly been in practise in parts of Europe for about 100 years, it is only during the last 10 years that it has come into fashion with the agriculturists of Europe and America. The silo has met with strong opposition on the part of that large body of agriculturists in the old world who believe in nothing but what was practised by their fathers before them, but in spite of this opposition and failures from bad management, the silo is steadily gaining its way, and ere long it promises to come into universal favour. The silo has this great recommendation, it is equally advantageous in a hot as in a cold climate. The succulence of silage is as great, if not greater, than cooked food, and it can be obtained at a considerably less expense. All foods are rendered more digestible by being stored in a silo; this is particularly the case with green maize. It is packed more closely, than hay, 12 tons of silage occupying the space of 1 ton of hay, while $2\frac{1}{2}$ tons of silage is equal to 1 ton of hay as food. The cost of erecting a silo varies according to the material used and the locality. An excellent silo was made by Mr. Standish Cox, of Rawden, Mudgee, in 1884. He made

an excavation in a hard soil bank, 12 feet broad, 12 feet deep, and 30 feet long. It took 6 men 4 days to make the excavation and put a roof over it. The wages paid were 6s. per day and rations. The roof was composed of old pieces of corrugated iron, the eaves being 18 inches from the ground. The silo was filled in November with about 170 tons of lucerne (not chaffed) in which was a quantity of dead, mossy grass, which stock will not eat. A cut was made into the lower side of the excavation, so that a horse might be taken in to tramp the silage. When filled the lucerne was weighted with loose earth, and the mass shrunk greatly. It was opened in the following June, while I was at Rawden. When first taken out the silage was quite warm and had a strong vinous flavour. The milch cows took to it at once and seemed to be very fond of it. In America the cost of cutting, hauling from the field, chaffcutting, and placing in the silo has been estimated at from 66 cents to 80 cents per ton; while the estimate for raising the crop, harvesting, running through the chaffcutter, and storing in the silo is from 1 to 2 dollars per acre. In 1832 an ensilage congress was held in New York, when reports from 100 persons who had made and used silage were received; nearly all the reports were wholly favourable. About the same time the Commissioner of Agriculture published the reports of a number of persons who had experience of silage, and nearly all were favourable to the economy of the system. The Commissioner says:—"There is hardly a doubt expressed on this point—certainly not a dissenting opinion." The great secret of making good silage seems to be to cut the fodder plant when it is at its best, to pack closely (running it through

the chaffcutter greatly assists this operation), and weighting well. Blocks of stone and boxes or casks filled with earth, or loose earth, are the best for weighting. A layer of straw placed on the top of the silage, and then a frame or set of planks with the weighting material above, is recommended by some. It will be found better to have two or three silos of moderate size than one large one. The size should be suited to the requirements of the farm, but invariably silos are made too large for the crop: people forget that silage goes into one-fourth the size of hay. The American farmers estimate maize to give 20 tons of silage to the acre. Rye may be estimated at 10 tons to the acre. Peas and oats give about the same return. Sorghum is an excellent crop for converting into silage. A fair crop will give 20 tons to the acre. On account of the saccharine in this plant it requires weighting well.

The most interesting experiment in silage making yet attempted in Australia is that carried out by Mr. W. Lamb on his property, Merrilong Park, Liverpool Plains, New South Wales. He first experimented with silage stored in pits, and, finding that the fodder was excellent for stock, he undertook to preserve the natural grasses of the country in silage stacks. At the time I visited his property he had about 1,000 tons of silage in stack, besides a very large quantity of native grass hay. The grass was cut by mowing machines and an "Acme" lifter was used in forming the stacks, which were rather roughly made. They were weighted with a layer of about one foot of earth and roofed with corrugated iron. Mr. P. Lamb, a son of the proprietor, estimated the cost of putting the ensilage into stack at 2s. 6d. per ton. The

stacks were made in the fields where the grass was cut, so that there was very little haulage. The outside did not seem to be useless, as it was found necessary to fence in the stacks to preserve them from the stock. This is the largest experiment in the way of preservingilage that has yet been attempted in Australia. Mr. Lamb has demonstrated that fodder can be conserved in large quantities for stock at a low cost, and ere long his example will be followed over a large area of Australia.

Of late we have had a striking illustration of the necessity of preserving fodder for stock. In the spring of 1887 the pastures all over Central Australia were waving like a corn field, and the next year the spring passed off with scarcely any rain. The consequence was that there was hardly any feed for stock, and but for a welcome fall of rain about Christmas the losses throughout the colonies would have been very serious.

SHEEP ON THE FARM.—To the agriculturist I would say by all means keep sheep on the farm. A small flock is as profitable, in its way, as a large one, and is likely to be more carefully managed. During the last dozen years a great change has come over the style of management on Australian farms: small flocks have increased enormously, and though a large proportion of these flocks were at first of a very "mixed" description, improvements are gradually being made. The farmers have found out the value of sheep, and many of them now possess flocks of excellent quality. In fattening sheep they do a large business, and so great is the change that fully one-third of the fat stock brought into Melbourne are from farms. Owners of small properties should be encouraged by the fact that some of the finest sheep in

Australia are to be found in the small flocks of Tasmania, and the merinos that have taken the highest stand in America are reared by the farmers in Vermont, whose flocks often do not number 300 head. There is no reason why the farmer's flock should not rival in excellence the sheep bred by the large flock-owner. The small flock can be more closely watched by the owner, and any tendency to deterioration noticed and counteracted on its first appearance. The business of fattening sheep for market has been found a very profitable one by farmers residing within easy reach of large cities. I have known as many as three lots of sheep fattened on one farm within the year. Everyone who fattens for the market will become somewhat of a dealer, and anyone having the knowledge of human nature, and judgment in selecting stock necessary to fit him for the business of sheep-dealing, is in no need of advice tendered by me. There is, however, a quaint piece of advice given by an old-fashioned English sheep-farmer which is worth bearing in mind when one is about purchasing stock. It is found in Fitzherbert's "Boke of Husbandry," and is to the following effect:—"Take hede where thou byest any leane cattel or fat, and of whom and where it was bred. For if thou bye out of a better grounde than thou haste thyselfe, that cattel will not lyke with the." Farmers generally elect to breed crossbreds or pure longwools, but I cannot help thinking they have made a mistake in keeping too closely to one of the mutton breeds, namely, the Lincoln. Leicesters are much neglected, Cotswolds have ever been very sparingly used, while the admirable Down sheep are scarcely ever seen. For producing prime mutton for the market, or raising lambs for sale, no breed equals the

Southdowns, Shropshire Downs, or Hampshire Downs. Now that growing sheep for mutton is coming into vogue I think the Down breeds are likely to attract the attention they deserve. The size of stock should always be regulated by the quality and quantity of the pasture, and, unless the pastures are extremely rich, the grazier will find it to his advantage to select medium-sized animals. It must be borne in mind that, though large animals yield a higher price than medium-sized ones, they require a proportionately larger quantity of food to fit them for market. Where wool is of equal importance with mutton, the proportion of wool to carcase must be taken into consideration. This subject has attracted much attention in America, but I do not think they have yet arrived at the conclusion as to which is the best size of sheep for a union of both interests. According to the authors of "*Connaissance du Mouton*," 55 lbs. net weight is the size most preferred for a combination of wool and mutton in France. Each district and breed of sheep will have its own standard as to the most profitable size of sheep to breed, and the standard will vary in almost every locality. This is a question which the farmer must depend on his own observation to solve. Where crossbred lambs are raised for market, it is a good plan to buy large-framed old merino ewes and put them to Leicester, Cotswold, or Down rams. Old ewes throw excellent lambs, and they can be purchased off the shears at a very low price. If properly treated and supplied with sufficient food they will give three or four good lambs after they are culled for age from the flock of the large estate, and then may be fattened and sold for killing. I have known this

plan adopted on several farms, and it has generally given satisfaction.

MARKING SHEEP.—A good material for branding sheep is often asked for. Pitch is objected to on account of the injury it does the wool. The following recipe for a waterproof marking ink for sheep was given in the *Scientific American*:—"Shellac, 2 ounces; borax, 2 ounces; water, 25 ounces; gum arabic, 2 ounces; lamp-black sufficient. Boil the borax and shellac in water till they are dissolved and withdraw from the fire: when the solution has become cold, complete 25 ounces with water and add lampblack enough to bring the preparation to suitable consistency. For red ink, substitute venetian red; for blue, ultramarine: and for green, a mixture of ultramarine and yellow." A common Australian branding material is lampblack and boiled oil, mixed in the proportions of 1 lb. of lampblack to three-quarters of a gallon of oil. An ingenious branding implement has been patented in New South Wales, in which the material for branding is contained in a reservoir in the handle. It is said to answer admirably for marking large flocks of sheep. The ear-marking implements of the present day are excellent, and a combination of marks can be arranged that is record enough for a general flock. The tip of the ear should never be cut off, and the "rogue's ear-mark," that is, cutting the ear off close to the head, should be punished by a heavy fine. For stud sheep, marking the inside of the ear with letters and numbers in Indian ink is an excellent plan for distinguishing the members of a stud flock. Fire brands on the face of sheep are a disfigurement, and are seldom distinct. Cutting the

nostrils of a sheep is a discredit to the person who employs it.

CARE OF SHEEP.—I would earnestly recommend all who keep sheep to treat them with kindness, if only for their own advantage, for there is no animal that responds so quickly to good usage as the sheep. The many thousands of sheep that die during the severe droughts to which, unfortunately, our country is subject, is a discredit to us as a civilized people, and certainly does not speak well for our knowledge of live stock husbandry. I have been assured by stockowners of long standing in Central Australia that, but for overstocking, the loss of sheep during a drought would be nothing exceptional. The future looks brighter than the past. With better appliances than were possessed by the pioneers, ample supplies of water are now being obtained in what a few years ago was considered a waterless desert. Mr. W. Lamb has shown how the surplus fodder of a good season can be conserved so that it will serve to tide over a bad time. During the late drought I heard of a small landowner, who had made a store of silage and hay, being able to sell fat mutton to his neighbours, while there was scarcely a fat sheep on any of the great estates in the district.

In the drafting yards sheep are often greatly knocked about by dogging, in order to get the work through quickly, and in handling sheep they are in most cases very roughly handled. This is frequently seen when it is wanted to turn up a heavy sheep. The animal is seized by the neck and flank, lifted off the ground, and plumped down on his rump. American sheep-farmers have an excellent plan for turning up a ram or heavy

sheep. Standing on the near side of the animal the man passes his arm over the sheep's neck, and with his right hand takes up the near hind leg. This brings the sheep on his quarter, and a slight effort with the left hand rolls it over on the rump. In this way a large ram or a ewe heavy in lamb may be turned up without suffering the least harm.

Sheep-breeding has ever been regarded with favour in all civilized communities. It is said that when some one asked M. Cato what was the most profitable part of husbandry, he answered, to apply himself diligently to the business of a grazier; and when asked what was the next most profitable thing in husbandry, he answered, to apply himself to the business of a grazier indifferently; and, on the question being repeated, he replied, to follow the business of a grazier even negligently. Columella considered the business of sheep-breeding more profitable than any other branch of live stock husbandry, and on this subject Fitzherbert remarks:—"Shepe in myne opinion is the mooste profytablest cattell that any man can have." If sheep-breeding is profitable in old Europe it is still more so in young Australia, which has been truly described as the land of the Golden Fleece. There is no animal that has a stronger claim on our kindness than the sheep. As a writer in the *Encyclopædia Londonensis* remarks:—"Of all the animals with which a Divine Providence has stored the world for the use of man, none is to be found more useful or more valuable than the sheep."

DISEASES OF SHEEP.

THROUGHOUT the greater portion of Australia south of the tropics sheep are singularly free from any serious diseases. A flockmaster in Central Australia once said to me :—"The only disease sheep suffer from in this part of the country is a severe drought." Truly, I think the remark may justly be applied to fully two-thirds of our island-continent. With anything like a fair supply of food and water, it is surprising how few ailments our sheep suffer from. Indeed, diseases are so rare that such a thing as a remedy for disease in sheep is very seldom kept on an Australian sheep farm. The consequence is that when a sheep is attacked by any complaint very little notice is taken of it, and the animal is usually left to take its chance. Should a sheep die suddenly, the fatality is usually ascribed to snake-bite. Often, when a number of sheep die in a flock, the mortality is put down to eating some poisonous weed. It is only in a few carefully-bred stud flocks that any notice is taken of sickness in a single sheep. The pulse of the sheep at rest beats at the rate of from 60 to 80 beats per minute. It is usually examined by placing the hand on the left side, where the beating of the heart may be felt. Any material deviation from the rate given may be taken as a sign of disease. If rapid,

hard, and full, it is an indication of high fever or inflammation. If rapid, small, and weak, it is a sign of low fever, loss of blood, and weakness. If slow, the probabilities point to brain disease; if irregular, to the heart being affected. In the following pages I have noted the diseases to which sheep in Australia are liable, and the mode of treatment that has been found most successful.

FOOT-ROT.—This disease is very common among merino sheep when kept on rich pastures and in a moist climate. All sheep are liable to be attacked by it, the longwools suffering less than any other variety. The Romney Marsh sheep very rarely suffer from foot-rot. It is generally believed by experienced sheep-farmers that this disease is contagious, and that sheep suffering from foot-rot, if introduced into a healthy flock, will communicate the disease, if the conditions of life are at all favourable to its development. An illustration of the contagious nature of this disease was given in the *Texan Wool Journal* of March, 1883, which, I fancy, was quoted from the *National Live Stock Journal*. The writer states that his father kept a flock of sheep on his farm for 30 years and never knew a case of foot-rot. During the summer of 1865 a neighbour brought a flock of sheep from Michigan on to his farm. Some of them were lame, but as they had no knowledge of the disease no notice was taken of it. About the end of September some of these lame sheep got through the fence and joined the sound ones. They were quickly got out, certainly before four or five days had elapsed. He goes on to say :—"Our sheep appeared to be all right for a month, then a few of them became lame, and so they continued till spring. When the warm weather set

in they got very bad—nearly all lame, and many on their knees, and, the remedies applied not being effective, many of them died. Even the April lambs were on their knees before June. The disease gradually spread throughout the neighbourhood, where it had previously been unknown.”

This disease is now much more easily dealt with than in the old squatting days, when each sheep had to be handled. It is much less frequent than it used to be when sheep were shepherded by day and folded at night. In many localities where foot-rot was common under the old style of management of the flocks, such a thing as a lame sheep is now very seldom seen. The cures for foot-rot are very simple. One of the most effective I know is that employed by Mr. A. I. Faithful, of Springfield, Goulburn, N.S.W. When a flock show symptoms of an attack of foot-rot they are run through a trough containing the following mixture:—An ounce of arsenic to a gallon of water, a handful of salt being added to each gallon. The arsenic, salt, and water are boiled together for six hours. Running sheep through a trough is a convenient and effective way of dressing for foot-rot.

I believe I was the first in Victoria who employed this means of treating the disease. I had a deal to do with foot-rot and always found arsenic a certain cure for it. By some sheep-owners lime is preferred to arsenic as a cure for foot-rot, particularly in the earlier (or scald) stage. The following remedy is recommended by a grazier in the *Australasian* of 30th January, 1888:—“Pass the sheep through a trough 12 feet or 15 feet long and about as many inches wide, with 3 or 4 inches in

depth of water in it, in which a small quantity of dry lime has been mixed. It should not be made so caustic with lime as to materially harden the hoof or affect the living, healthy skin. When not made too caustic it can be used more frequently to advantage. I found it more effectual than arsenic." The following cure for foot-rot is given in the *Breeder and Sportsman*, June, 1883:—"A Vermont sheep-raiser claims that foot-rot can be entirely eradicated from a flock of sheep by dipping the feet of every member of the flock, whether lambs or not, into kerosene oil and then putting a pinch of sulphur between the hoofs. One repetition of the treatment at the end of two weeks he claims will be sufficient. They should be kept in a dry place for a few hours after each application of the kerosene."

In dressing for foot-rot I used from half to three-quarter ounce arsenic mixed with equal quantity of carbonate of potass. as a solvent to the gallon of water, the two being boiled together for a few hours.

FLUKE, also known as the rot, liver rot, coathe, and lane, is a parasitic disease, caused by the presence, in the bile ducts of the liver of the sheep, of a flat worm known as the fluke, the *Fasciola hepatica* of zoologists. It is shaped like a sole, hence its common name. It is of a light-brown or flesh colour, and varies when full grown from half an inch to an inch in length. The disease is known nearly all over the world. In Northern and Central Europe it is very common. Professor Leuckart estimated the annual loss of sheep from this cause in Central Europe to be 1,000,000 head. In wet years the loss is about three times as many. The life history of this parasite was investigated by Professor A. P. Thomas,

who furnished an exhaustive report on the subject to the Royal Agricultural Society of England, which was published in the Society's Proceedings, 1883, and from which I take the following condensed description:— "The fluke deposits a large number of eggs, as many as 7,000,000 having been obtained from the gall bladder of a single sheep. They are very small, being only $\frac{1}{200}$ of an inch in length. The fluke insect goes through a variety of changes before the parent form is again reached. From the egg is produced an animal which is never like its parent, never becomes like it, and never lives where its parent lives. The egg is voided by the sheep, and under favourable circumstances is hatched and becomes an embryo, which finds a home in the body of a snail (*Linnaeus truncatulus*), where it grows and multiplies, not in the common way of producing eggs, but by giving rise to germs within itself, and of these there may be three or four, or even more, generations within the body of the snail. These are called spore-cysts or bags of germs. At last a change occurs and a different form arises, which is destined to leave the snail in some way not clearly understood. This is called the cercaria. It is a flat, oval body $\frac{1}{30}$ of an inch in length, with a tail like a tadpole, twice its length. The cercaria swims about for a short time in shallow puddles, and attaches itself to the roots of grass, where it shakes off its tail, forms a cyst over itself, and, if taken into any animal with its food, it develops into the mature fluke. If the cysts remain on the grass a few weeks the young flukes they contain die."

The number of cercaria that may be produced from a single egg varies from 200 to 1,000. There is no known

cure for fluke so long as sheep are kept on rich, moist country. Removing them to a dry pasture and giving them abundance of salt will prove effective if the disease has not gone too far. When sheep show indications of being attacked by fluke they should be removed to a healthier pasture at once. Bush fires do a deal of good in destroying the germs and the snails. Giving sheep plenty of salt at all times is a good plan, as it is said to prevent the development of the young fluke in the sheep. An instance of the efficacy of salt in preventing fluke was given by Mr. T. P. Heath before the Devon Chamber of Agriculture, which was reported at some length in *The Field* of (I think) October, 1882. The district was an unhealthy one, no sheep having wintered with safety on permanent pastures on or near Mr. Heath's farm within living memory. In this experiment he divided a lot of perfectly sound sheep, bought for the purpose, into two equal parts. One lot received half a pint of oats and a quarter of an ounce of salt each per day, which the others did not get. All were killed during the summer and their livers examined. The sheep that received the salt were as sound as the day they were born, while those not supplied with salt had a number of flukes in them, and Mr. Heath did not think he could have kept them through the winter. Fluke is not nearly so common in Australia as in Europe. The great plain of Central Australia, once the bottom of an immense shallow sea, is so salt that I do not think the fluke can exist on it. A writer in the *Australasian* a year or so ago recommended lime and salt, and during spring and summer salt and sulphur, as a preventive of fluke. All our aims should be directed to prevention of

fluke, as it is almost hopeless to attempt curing it. Draining the land of surface water is a most important matter. Fluke eggs may be brought on to a pasture in manure, in the earth adhering to the feet of animals, and in running water, especially during a flood, when large numbers of snails are spread over the soil. Rabbits, hares, and all marsupials, are often infested with fluke. Dressing the land with limed salt is not possible, but every stockowner can supply his sheep with salt. The proportion recommended is 8 lbs. of sulphur to every cwt. of Liverpool salt. When sheep are attacked by this disease their eyes soon lose their brightness and become tallowy. The skin grows moist and has a dull appearance, quite different to the hue of a healthy skin, and the wool becomes loose. As the disease advances dropsy sets in, and soon after the animal dies in a state of rotteness.

ANTHRAX, OR CUMBERLAND DISEASE.—This disease is identical with that known by various names in different European countries. In England it is known as anthrax fever, splenetic apoplexy, and carbuncular murrain. In France it is called *maladie du sang*, *sang du rate*, and *splenorrhagie*. In Northern and Eastern Europe it is called milzbrand. It is very dangerous to both sheep and cattle. It received its Australian name from the circumstance that it first appeared in the county of Cumberland, N.S.W., in 1847. An exhaustive report on this disease was furnished by Mr. P. R. Gordon, Chief Inspector of Sheep for Queensland, in the year 1868; and in October, 1888, some very interesting experiments were made by Dr. Germont and M. Loir, at Junee, N.S.W., with the attenuated virus of anthrax, with the object of pro-

testing the sheep experimented on, against the disease. Anthrax is a highly virulent and fatal disease of the blood, having the characteristics of an acute inflammatory fever, and is communicated by contagion from one animal to others. The disease is caused by a microbe, which is capable of leading an independent existence for years in the soil. It thrives best in rich, deep soil, such as that by the margin of rivers and creeks. Warm, rainy weather is favourable to its development. There are few, if any, premonitory symptoms, and it has been truly remarked that it is next to impossible to say whether the animal is diseased or not until it is dead. The only outward symptoms noticeable are that the animal is dull and languid, the back is arched, and immediately before death a bloody, slimy matter is in some instances ejected from the nostrils and anus. It has been said to be essentially a disease of the spleen or milt, but, although that organ is always implicated, it is undoubtedly a disease of the blood.

It is doubtful if the disease can be carried from an infected district into one not favourable to its development and established there. Dr. Morris, of Sydney, is of opinion that the disease is of a miasmatic character, analogous to autumnal fever in the human family; that it may be expected in a rich argillaceous alluvial soil more or less impervious to water, when water is found near the surface, or when marshy land is traversed by sluggish streams. A wet spring followed by a warm summer always favours the development of the microbe of anthrax, while frost at once arrests its destructive tendency. It is seldom or never met with in regions of primary formation with a sandy, calcareous and

sterile soil, in which there is no stagnant water and which contains only a small quantity of organic remains. It is generally the case that the best-conditioned sheep in the flock are the first to be attacked by anthrax. It is possible for sheep to be depastured on country that is favourable to the development of anthrax and yet escape from attack. Mr. J. B. Bettington, of Brindley Park, N.S.W., told me that when the sheep on his estate were folded at night and shepherded during the day there was one portion of the property that developed anthrax every year. Since the property has been enclosed, and the sheep grazed in paddocks, there has not been an instance of a sheep being attacked with the disease, though they graze regularly on the spot that formerly developed anthrax every year.

The experiments made by Dr. Germont and M. Loir, in inoculating sheep with the attenuated virus of anthrax as a protection against the disease, were thoroughly successful. Indeed, this preventive inoculation is the only way that the dread disease of anthrax can be met. A considerable area of good pasture land in New South Wales is liable to anthrax, and within that area it is likely that inoculation will be commonly practised.

HYDATIDS.—This disease is spread over a very large portion of the Australian colonies, but as few sheep suffer from it very little notice has been taken of the disease. It is dangerous to human beings, and most animals wild, or tame, are liable to be attacked by it. Hydatids—no matter what animal, wild or domestic, may be their bearer—belong to one species of tape-worm, being the larval form of the tape-worm (*Tænia echinoccus*)

which infests the dog and wolf. Unfortunately it is not nearly so dangerous to the dog as it is to the sheep. The mature parasite has a length of from one-sixth to one-third of an inch. It reproduces itself by ova, which dogs infested with the disease are continually throwing off in fæces. These ova float in the air, settle in water, and are taken up by animals in drinking. When an animal swallows the ova of tape-worm the walls that enclose it are broken down and minute embryos of a spherical shape are set free. These larval parasites bore their way into the blood-vessels and are carried by the blood to various organs, but principally to the liver, lungs, and brain. In these organs the young hydatids becomes encysted—that is, surrounded by a sac formed of the tissues of its host. The fluid in this sac is of a milky hue, and in the centre is a thick membrane surrounding a central granular mass. I have never heard of any cure for hydatids in sheep, and so dangerous is the disease in man that it is estimated fully 25 per cent. of those attacked by it die.

COAST DISEASE.—In a limited area in the south and south-west of Victoria, and south-east of South Australia, on a band of country along the coast, the stock are afflicted with what for want of a better name is called “coast disease.” The locality is limited, and the remedy adopted is to shift the stock frequently. At present we do not know the nature of the disease, its cause or cure. Indeed, it is believed that there is no cure for horses, cattle, or sheep while they are kept on the country subject to the disease. The matter has never excited any public interest. The locality in which this disease occurs is of small area, and the plan adopted is to remove

any sheep attacked by it to a healthier pasture further inland.

FLIES STRIKING SHEEP.—In Tasmania, and in some of the wet districts of the mainland of Australia, sheep that scour or require dagging are liable to be struck by the large “blow” flies, who deposit their eggs in the moist portion of the wool near the tail. If the weather is warm maggots soon appear, and the sheep suffer much inconvenience. The case needs prompt attention, or valuable sheep may be lost. Clearing away the wet wool with a pair of shears, and dressing the parts affected with carbolic acid, is said to be an unfailing remedy. Kerosene is also recommended. Where sheep are properly looked after there are few losses from this complaint.

TICKS AND LICE.—Though sheep troubled with ticks or lice can scarcely be called diseased, yet these parasites give quite as much trouble to the generality of flockmasters as all other diseases put together. All over Australia it is now necessary to dip once every two or three years for ticks or lice, and in many districts the sheep require to be dipped every year. This is owing to the neglected condition of the small holders’ flocks, in which lice are invariably found. There are several patent dips sold, almost any one of which will serve to destroy the insects. An infusion of the common “knock-me-down” tobacco that was formerly grown for dressing scab is very effective, and it injures neither the sheep nor the wool. Most flockmasters appear to prefer cold dipping, but I fancy a hot dip is more likely to be efficacious.

RED WATER.—This disease is very rarely met with in

Australia. I have known instances of red water in a portion of Tasmania where there were few streams and much stagnant water. It is said to be a blood disease. So far as I have been able to learn, the principal remedy is purgative medicine. Probably a change to a different description of pasture would be beneficial. Salt is said by some to be beneficial.

THE WORM.—In a few small areas of New South Wales, South Australia, and Victoria, and in a good-sized area of Queensland, sheep are liable to be attacked by what is known generally as the worm. There are two diseases which are known by that name. In some portions of the south-west of Victoria, and in the adjoining part of South Australia, sheep are liable to be attacked by the lung worm (*Strongyles filaria*), while in Queensland, particularly on the Darling Downs, the sheep suffer from the stomach worm (*Strongyles contorta*). The former occurs in the bronchial tubes, sometimes in very large numbers. It is a small, round, thread-like worm, tapering at both ends, but more gradually anteriorly than posteriorly. The colour runs from milk white to dirty white. The male is from 1 inch to $1\frac{1}{2}$ inches long; the female is twice that length, and not unfrequently measures $3\frac{1}{2}$ inches. They are about $\frac{1}{36}$ of an inch thick.

The stomach worm is also thread-like in shape, tapering at both ends. The colour is reddish or a brownish red when alive. The female is distinguished by its contorted appearance. The male is very thin and barely an inch in length.

These worms produce innumerable eggs, which contain living embryos while yet in the ovaries. The mother

worm, as soon as the ovaries have reached a certain stage, prepares to leave its place. The lung worm is voided by coughing, the stomach worm in the excrement. Once discharged, the old worm soon dies, decomposes, and passes into water. If the sheep drink this water, or eat the aquatic plants growing therein, the embryo worms reach their place of destination. A great many die, but there are myriads of eggs, and the female worms outnumber the males five times.

This disease invariably attacks young sheep, and in the districts where it is prevalent a large proportion of the weaners die annually. The survivors do not make any advance until after the second shearing. On the Moorak Estate, Mount Gambier, S.A., where the disease is common, 2,500 weaners were fed on turnips for five weeks before being put on the pastures. The result was that they never suffered in the least from worm. It is believed there is an essential oil in the turnip that prevents the development of the parasite. On the Darling Downs, Queensland, the sheep suffered for many years from stomach worm, but of late an effectual remedy has been discovered. One ounce of arsenic, 1 ounce of washing soda, and 1 ounce of carbonate of soda are boiled together in two quarts of water for half an hour and kept well stirred. When the ingredients are thoroughly dissolved 10 quarts of cold water are added, and of this mixture a gill is a dose for a sheep. Mr. Hodgson, of Eton Vale, Darling Downs, has made a very handy instrument for administering the mixture. It consists of a tin tube, with a curved, bell-mouthed opening at one end. This curved portion holds just a dose. It is filled by dipping into a tub containing the mixture, the

straight end is inserted in the sheep's mouth, and a slight tilt administers the dose. That this remedy is an effective one, I had ample testimony during a trip I made through the Darling Downs.

Mr. Thomas Bath, of Ceres, Victoria, has used the following remedy for lung worm with great success:—One quart of turpentine and 11 quarts of milk are thoroughly mixed together, and of this 3 ounces is a dose. Mr. Bath has given this remedy to all his young sheep, and they have not exhibited any symptoms of the disease, though previously it appeared every year. The turpentine and milk must be thoroughly mixed, or some sheep will get too great a proportion of the former and die.

In the south-west of Victoria and the south-east of South Australia, the young sheep affected with lung worm are put into a close building and caused to inhale the fumes of carbolic acid. One inhalation is considered sufficient. It is a dangerous operation and must be carefully performed, or many sheep may be smothered. The *World*, U.S.A., gives the following cure for this disease:—One tablespoonful of turpentine to four times as much oil. One tablespoon of the mixture is a dose.

Mr. J. Hurst, of Summerleigh, near Lancefield, Victoria, discovered an effective way of dressing sheep troubled with worm. He applies turpentine externally, using a gallon of turps to 100 sheep. His plan is to apply the turps along the spine from the withers to the tail by means of an ordinary can with a spout. The best time for using this remedy is after shearing, but it can be applied at any time without danger. It is more effective in warm than in cold weather. After being dressed the sheep required to be watched for about half an hour, or,

owing to the way they jump on each other, some may be smothered. Mr. J. Hurst has used this remedy for some years past, and he tells me that he has never known it fail.

SCAB.—This disease was very common in the early days of the colony. Owing to bad management it was allowed to exist among our flocks until the squatting tenure of the runs was giving way to freehold properties. The scab insect (*Acarus*) is very minute, being difficult to distinguish without the aid of a magnifying glass. I have dressed many thousands of scabby sheep, but never saw the insect, and never could get anyone to point it out to me. The females are considerably larger and more numerous than the males. The life of the female is short, not extending beyond the time for laying her eggs. In three days or thereabouts the eggs are hatched. It is estimated that from one pregnant female acarus six generations will produce a million female and half that number of male insects. This shows the necessity of promptly dealing with this disease when it appears in a flock. The Australian sheep have been free from scab for many years past, and as every precaution is taken against its introduction into the country there is not much chance of our flock-masters being called upon to dress their sheep for scab. When scab was common in Australia one of the best cures was the common "knock-me-down" tobacco that was grown for the purpose of dressing scabby sheep. But little trouble was taken in growing this plant. The seed was scattered over an old sheep camp and the place harrowed. Often it was not enclosed with a fence. The tobacco was cut when the plant was in flower and hung in the

wool-shed to dry. Afterwards it was put into a heap to sweat. It could, however, be used in a green state. When the common kind of manufactured tobacco was used the proportion was 1 lb. tobacco to 5 or 6 gallons of water, boiled for some time. When the "knock-me-down" tobacco was used people were not particular as to the quantity, as it cost little. Tobacco is a safe cure for scab, and injures neither the wool nor the animal.

Arsenic was also used as a cure for scab, the proportion being from $\frac{1}{4}$ oz. to $\frac{1}{2}$ oz. to the gallon of water. It was found to be a dangerous remedy and was soon given up, but its use as a remedy for scab led to the discovery that it would cure foot-rot. At present scab is unknown in Australia. It exists in a remote district of New Zealand, where it has been lately discovered among some sheep that have gone wild in a mountainous country.

Lime and sulphur was a favourite remedy for scab in a few districts, but it was never generally practised.

BREEDING.

“Rassemblons des faits pour nous donner des idées.”—BUFFON.

“Not one man in a thousand has accuracy of eye and judgment sufficient to become an eminent breeder. If, gifted with these qualities, he studies his subject for years, and devotes his lifetime to it, with indomitable perseverance he will succeed, and may make great improvements ; if he wants any of these qualities, he will assuredly fail. Few would readily believe in the natural capacity and years of practice required to become even a skilful pigeon-fancier.”—DARWIN.

MANY modern stockowners are of opinion that all the important improvements in our domestic animals have been effected within the last century, and that previous to the time of Bakewell, Jonas Webb, Booth, Bates, and other celebrated stock-breeders, the management of the domestic animals was carried on in a purely mechanical manner. That great improvements were effected by the celebrated stock-breeders referred to it would be useless to deny, and it would be unjust to withhold from them their well-earned fame, but it would be equally unjust to conclude that previous to their time British stockowners did not pay much attention to breeding, or that their stock were not possessed of very useful qualities. The tendency of modern stock-farming in England has been to improve the form of the animals and promote early maturity. In attaining these results the old types have in many instances been almost entirely obliterated.

Though very great improvements have been effected in the form of most British breeds of sheep and early maturity developed, there are not a few old-fashioned farmers who declare that these advantages have been dearly purchased at the cost of the hardihood and robust constitutions of the old types. The old race of British farmers bred stock well suited to the conditions of life in each district. Though late in reaching maturity they were of remarkably robust constitution.

It is extremely doubtful if the breeding and rearing of the domestic animals were ever matters of indifference to intelligent stockowners. The records of history give abundant proof that even in the most ancient times the improvement of farm stock, and the animals kept for sport or luxury, was most carefully attended to, and that the main principles of breeding were well understood. Agriculture and husbandry have always been held in high esteem by all nations that have achieved any degree of civilization, and often we find that the men who played a leading part in the ancient world possessed an intimate knowledge of the art of breeding and rearing live stock.

Mago, the Carthaginian, wrote no less than twenty-six books on agriculture, which were accorded the special honour of being translated into Latin when the Romans conquered Carthage. The "Iliad" contains a great many allusions to agricultural pursuits, all of which show a familiar knowledge of the management and breeding of stock, and a keen appreciation of those animals which exhibited qualities greatly superior to the general standard; though this appreciation was not always exhibited in a commendable manner. For instance, the

celebrated chariot horses of Æneas, we are told by Homer, were bred in the following manner:—

“ Anchises, king of men, the breed obtained
By cunning, to the horses sending mares
Without the knowledge of Laomedon ”—

a mode of obtaining the service of a sire without going through the formality of paying the fee that has been practised more than once in Australia, when stud horses were turned out with the mares. In Mitford's “History of Greece,” mention is made of a breed of horses possessed by Erechthonius (who is said to have lived some generations before the Trojan war), which, by care and judgment in the choice of stallions, had been brought to a point of excellence far above anything in the surrounding countries. The story of the “Golden Fleece” is generally accepted as merely the tradition of an attempt on the part of the Greeks to obtain some sheep of the celebrated breed which fed on the pastures of Colchis.

The monuments of ancient Egypt, Babylonia, and Assyria show that the inhabitants of those countries, even in the earliest periods of their history, paid great attention to the breeding and rearing of stock, and that they fully understood the art of feeding. The colour of their cattle was an object of as great solicitude with them as it is with us, and had, no doubt, as great an influence on the value of the animal. In Osburn's “Monumental History of Egypt” mention is made of “three fat cattle of Prince Agathodemon, which, as being of singular beauty, were brought for his inspection before being slaughtered for the funeral banquet.” A representation of these three oxen is given, and they certainly are

extremely shapely animals, and would compare well with the best modern specimens of the long-horned breeds. They fully justify Mr. Osburn's remark :—" In symmetry of form, no English grazier need be ashamed of them." They show a deficiency of brisket, but that is probably due to the unskilfulness of the artist. Even among what may be called savage nations, the idea of improving the breed of their domestic animals by selection seems to have been early developed in most nations. Darwin mentions that the people of South Africa value their cattle next to their women, and take a pride in possessing animals that look highly bred. The semi-civilized Incas of Peru used annually to kill off the old and weakly vicunas and guanacos, reserving only the strongest and handsomest males for sires. Indeed, history shows that in all countries and in all ages great attention has been paid to the breeding of domestic animals. I now purpose placing before the reader certain principles or modes of breeding which have stood the test of experience, giving, at the same time, illustrations of the results in different races of animals. I have no intention of assuming any superior knowledge to those skilful and practical men whose names throughout Australia, as breeders of high-class stock, have become "familiar in our mouths as household words." My object is to give all the assistance in my power to those who are engaged in the work of improving our domestic animals—a work that is of the greatest importance in the advancement of our country, and one that has my earnest sympathy.

The object of the sheep-breeder in Australia, as in other parts of the world, should be to produce, with as little

expense as possible, sheep bearing the heaviest fleece of the highest quality, combined with well-developed frames and sound, hardy constitutions; due regard being paid to the climate, food, and aspect of nature in selecting the variety of sheep to be reared. The hackneyed saying that "like begets like" is one of those half-truths frequently adopted by persons who lack the inclination, or have not the capacity, to study the principles of breeding, which invariably leads to failure and disappointment when put into practice without studying the natural fitness of the breeding animals in all other respects. It is only when a type has been fixed by long inheritance that the maxim can be depended upon. That length of inheritance is highly favourable to conferring fixity of type is now admitted on all hands, even by those who differ on all other questions relating to stock-breeding, and all successful breeders of high-class stock have unhesitatingly adopted the principle. It does not follow that this inheritance is certain. If it were, there would be no scope for that skill and intelligence which has made our leading stock-breeders so famous. In breeding high-class animals there is no royal road to eminence. Success can only be earned by patient care and diligence, and by the possession of those qualities mentioned in the quotation given at the head of this division.

IN-AND-IN BREEDING.

Of all the theories that have been ventilated concerning stock-breeding, that of in-and-in breeding, or the pairing of relations within the degree of first

cousins, has certainly provoked the greatest amount of discussion. The ablest writers have taken the subject into consideration; but so varied have been the opinions expressed that, at the present day, the question of the advantage or disadvantage of the practice is apparently as far from settlement as ever, though it is a significant fact that in-and-in breeding is practised by almost all the successful stud stockowners of the present day. Among the most strenuous opponents have been, and still are, many scientific and professional men: and, notwithstanding the fact that for nearly a century the principal of breeding from closely related animals has been followed by cattle-breeders to the great improvement of their stock, and, when skilfully employed, without any of the ill-effects which are said to be invariably the result of the practice, many scientific men are still of opinion that in-and-in breeding will infallibly lead to degeneracy and disease; that a change of blood is absolutely necessary to keep up the fertility and stamina of the breed; and that in-breeding is against what they call "the law of nature." That breeding from closely-related animals should ever have been practised, with so many authorities strongly opposed to it, is surprising. It shows that those persons who took the pains to study the subject, looked upon it not as a question of scientific physiology, but as a question of practical utility.

The results obtained by a few enterprising stock-breeders, practising in-breeding, have led some unthinking imitators to adopt it as a simple and easy mode of attaining success. Breeding from closely-related animals, merely because they are closely related, is

almost certain to result in failure. In-breeding is a dangerous two-edged weapon, which can be used successfully only by those possessed of the necessary degree of skill and experience. I purpose to inquire, as exhaustively as the means at my disposal will permit, whether the ill effects attributed to in-breeding are borne out by facts.

The theory that, in the human race, a union between closely-related individuals would result in a large proportion of the progeny being consumptive, malformed, deaf mutes, or idiotic, has been so persistently advanced by certain professional men that it was, until the last quarter of a century, generally accepted as an established fact. Of late years, however, considerable inquiry has been directed to this subject, and, strange to say, the results of those inquiries have almost invariably gone to show that the children of closely-related parents compare very favourably with the average children of the country in which the inquiry has been made. The statistics collected by Drs. Beamis and Howe show that the fertility of consanguineous marriages is above the average, being 5·6 as against 4·5, the general average. The inquiries made by M. Augustus Voisin regarding the community of Batz, near Le Croisic, in Brittany, bear on this question. The population of Batz, numbering about 3,300, has had but little connection with the rest of the department for the last two or three centuries, and consequently must be considerably in-bred, and marriages between relations very common. In 1864, M. Voisin tabulated the result of 46 marriages among blood relations in Batz. There were 172 children issue of these marriages, all of whom were healthy, and not one

laboured under any constitutional disease. Only two marriages were barren, the persons in these cases being related in the third degree. Mental disorders, idiocy, surdo-mutism, and blindness were almost unknown in the community, and the moral character of the people compared very favourably with the general population of the country. A community, existing under almost identical circumstances, is to be met with at the Claddagh, a suburb of Galway. The residents of this fisher-village have for a very long time been known as an exclusive community. They have intermarried for centuries, and do not exhibit any symptoms of those afflictions which are said to result from in-breeding. The fisher-communities of Scotland are also greatly in-bred, as the paucity of surnames in many of the villages clearly demonstrate.* A writer in *Blackwood's Magazine* notes the fact that there were no less than twenty-five "George Cowies" in Buckie. "By-names," or "tee-names," as they are called, are necessarily much used. In each of the villages the marriages have for centuries been confined to their own communities, as none but a fisher-girl would make a fit helpmate for a fisherman. She would be brought up to the business of selling fish, mending nets, and preparing bait, occupations in which an inland or town-bred girl would be useless. The inhabitants of these fisher-villages are well-grown and hardy, and I have nowhere seen it stated that there is a preponderance of deaf mutes, idiots, or deformed children among them, as compared with the rest of the country. The Newhaven fisherwomen are highly celebrated for a robust style of beauty. In point of morals, the fisher-communities are said

to be greatly superior to the rest of the population of Scotland.

A similar instance of an in-bred community is afforded in the Maragatos, a peculiar people living in the north of Spain, who are said never to marry out of their own tribe. Mr. F. H. Deverell, who visited the locality, says* :—"The men are nearly all engaged in the carrying business. They are the trusted muleteers of Leon, and it is noticeable, as possibly connecting them with the Moors, that Spanish words relating to caravan craft and to horses are mostly of Arabic origin. They seem a healthy race; the men are thickset and strongly built, but rather short. The women do the work at home and in the fields."

The history of the Ptolemies affords the most striking illustration of in-breeding that is recorded of the human race. Marriages between brothers and sisters, uncles and nieces, nephews and aunts, were common, and where the marriages were not consanguineous they were principally made with the family of the Selucidæ, who were quite as in-bred as the Ptolemies. This dynasty ruled over Egypt for about 300 years. Cleopatra, who was the last sovereign of the family, but not nearly the last of the race, does not give one the idea of being degenerate in body and mind, as the family have been described by Niebuhr. Had this family shown the evil effects which are said to follow in-breeding, it is not probable they would have been permitted to hold the throne of Egypt for such a length of time, nor would Cleopatra have possessed those rare physical advantages which rendered her so famous.

* "All Round Spain."

Incestuous marriages were not only common in ancient Egypt and Persia, but were held in the highest esteem; and yet history furnishes us with no ground for supposing that those nations suffered any physical degeneracy in consequence. The Jews are a very inbred race, and though they have been hunted down and persecuted more than any wild animal on the face of the earth, and subjected to treatment calculated to develop those diseases which are said to result from in-breeding, they have always been a very healthy race. It has often been remarked that they suffer much less from consumption than any people among whom they may dwell. Their laws permit the marriage of much closer blood relations than is the rule among Christians. In the Bible, we find that Abraham married his half-sister Sarah, and his brother Nahor married his own niece Milcah, the daughter of his brother Haran. Moses and Aaron were the issue of a marriage between Amram and his aunt Jochebed. Marriages between nephew and aunt, uncle and niece, are even now not uncommon among the Jews. As a proof that in-breeding among the Jewish race, though continued for so many centuries, has not had the ill effects attributed to the practice, I may state, on the authority of M. Isidore, chief rabbi of the French Israelite Consistory, that in the Paris congregation, consisting of 25,000 souls, only four deaf mutes exist, while the proportion of deaf mutes in the population of France is 6 in 10,000.

The following illustration of in-breeding is cited by M. Ribot* :—“ Dr. Bourgeois wrote the history of his family, which was the issue of a union in the third degree of

* “Heredity.”

consanguinity. In the course of 160 years there were 91 marriages in that family, 16 of them consanguineous, and yet there resulted neither infirmity nor sterility." A writer in the *Westminster Review*, 1863, remarks, with respect to consanguineous marriages:—"We cannot conclude otherwise than that the general opinion, that there is some special law of nature which close breeding infringes, is founded rather on a kind of superstition than on any really scientific considerations. Facts brought forward in aid of this opinion are in most cases traceable to the law of inheritance."

The question is very clearly and tersely summed up by Mr. Benjamin Ward Richardson. In alluding to the hereditary character of certain diseases, which has led to the common belief that marriages of consanguinity are unfavourable to length of life, he says:—"This is very true and very false. Marriages of healthy stocks in close relationships yield the best lives, while marriages of unhealthy stocks yield the worst of lives. I have knowledge of one village in this community in which the marriages of consanguinity may be said to be the universal rule. In that village the people are among the healthiest of the community. I could trace among them no evidence of any serious constitutional disease, nor of any deformity of body. I have observed the same freedom from disease in families in which intermarriage is the rule, the stocks being healthy. On the other hand, I have known a whole family, and a large family, die clean out by intermarriage, the parental stocks on both sides being afflicted with constitutional disease."* Dr. Edward Jarvis, the distinguished statistician, in a letter

* "A Ministry of Health."

to Dr. Newman, says :—"Cousins, descendants from a common ancestry, have a common heritage of good, of evil, of power and weakness, and if these join in marriage their issue have a double chance of inheriting whatever qualities they may both possess. If, then, both parents, although cousins, are perfect in constitution and health, and have nothing to transmit but power, then their children have a double security against constitutional imperfection, and a double warranty of inherited capacity and strength. The converse is also true with cousins who have imperfections and liabilities in common. If they marry, they provide a double chance of the repetition of the same weaknesses and susceptibilities in their offspring. . . . In this view of the matter, the objection to consanguineous marriages lies not in the bare fact of their relationship but in the fear of their having similar vitiations of constitution."*

The extent to which in-breeding has been carried by the owners of stud shorthorn cattle is surprising, particularly when we take into consideration the number of men of high scientific attainments who have expressed opinions strongly opposed to the practice. It is entirely due to the celebrated breeders of high-class shorthorn cattle that we are indebted for our knowledge of the benefits to be derived from in-and-in breeding, combined with skilful selection of the breeders, in improving the breeds of domestic animals and fixing a type. Throughout the herd book there is scarcely an instance of any celebrated strain of shorthorns but what is greatly in-bred. A famous instance of this is the celebrated bull, "Comet," bred by Mr. C. Colling in 1804. .

* Quoted in "Stock-Breeding," by Manly Miles, M.D.

"Comet" was the most successful bull of his day, and he was highly successful at the stud, as a reference to the herd book will show. His stock were greatly prized, and his blood is largely represented in all the most fashionable families of the present day. He was thought so much of by stock-breeders that, at the sale of Mr. C. Colling's shorthorns in 1810, he realized 1,000 guineas, at that time and for many years after the highest price paid for a bull of any breed. The well-known "Duchess" tribe of shorthorns are descended from a cow of that name, bred by Mr. C. Colling. She was by "Comet," and her dam was by the sire of "Comet." This in-breeding has been kept up throughout a long series of generations; and so far from resulting in degeneracy, the "Duchess" tribe are now the most fashionable and the highest-priced animals in the world.

With many cattle-breeders it is accepted as a fact that close breeding induces barrenness, and yet an examination into the facts would almost lead to the contrary conclusion. The following extract from the *Live Stock Journal* bears on this point:—"There are not now existing in the kingdom any cattle reared from closer affinities than are those at Warlaby. Yet at Warlaby itself there were in 1883 one pair of twins and a triple birth; at Killerby there was a pair of twins; at Mr. St. John Acker's two pairs; at Lord Polworth's, one pair; another at Mr. Talbot Crosbie's, another at Mr. R. Welstead's, whilst at the Duke of Northumberland's, Mr. Willis's, of Cuperby, and Mr. J. Pears' . . . there were in each case no less than three pairs of twins in one season. . . . In the

lot of cows and heifers of which these herds are composed, and which probably altogether do not exceed 250 breeding animals, no less than 17, or nearly 7 per cent., produced more than one young one in 1883. The rate of increase is above the ordinary rate of unpedigreed, loosely bred dairies."

That in-breeding has not impaired the fertility of the shorthorn breed of cattle I think we may fairly assume, and that immense improvement in the form and fattening qualities of the breed has been effected by it cannot be denied. There remains, then, the question, has in-breeding impaired the constitution of the breed? By some breeders of stud herds the opinion is firmly held that the result of the practice has been to weaken the constitution of the breed.

That some fashionable in-bred families of shorthorns have exhibited a tendency to weakness of constitution, while others are shy breeders, is well known. But I question much if this is to be attributed to in-breeding. The artificial manner in which stud shorthorn cattle are now reared would alone account for any weakness of constitution and infertility.

Mr. Anthony M. Gibson, of Ravenstone Vale, while presiding at the luncheon of the Greyrigg and Mountain District of Westmoreland Agricultural Association is reported as having made the following remarks bearing on this question of high feeding:—"He might say that he had judged at nearly every show in England and Ireland, and he might say he knew almost every herd in England, and he again repeated that they were on false lines as shorthorn breeders of our great herds. Thirty or forty years ago they had a splendid herd of short-

horns at Lowther, and the system they employed was the right one, and he hoped that they would again have the same class of animals from their natural pastures in a natural condition. The day would come, he hoped, when the artificial would be done away with."

Many shrewd studowners are of opinion that the sterility attributed to in-breeding is principally due to the excessive and injurious feeding of the young animals. The evil effects of breeding from overfed animals have of late attracted the notice of English stockowners. It has been found that the stock become of less value in the market, though they display a great aptitude for early fattening. Their carcasses make a fine show in the butchers' shops, but the housewife finds they are not profitable, there being so little lean meat in proportion to the quantity of fat. Mr. Miles says on this subject:—"A remarkable development of the tendency to lay on fat is usually accompanied by a delicacy of constitution, a diminished secretion of milk, and a loss of fecundity."

In-breeding among Herefords does not appear to result in degeneracy. Mr. Price, a celebrated breeder of Herefords, says *:—"I bought from Mr. Tompkins a considerable number of his cows and heifers. I have kept the blood of these cattle unadulterated for forty years, and Mr. Tompkins assured me that he had bred the whole of his stock from two heifers and a bull, selected by himself early in life, without any cross of blood. My herd of cattle has, therefore, been bred in-and-in, as it is termed, for upwards of eighty years." He says "the greater portion of his herd was bred in a direct line on both sides from one cow, now in calf for the twentieth time. I

* *Farmer's Magazine*, 1841.

have bred three calves from her by two of her sons, one of which is now the largest cow I have, possessing also the best form and constitution; the other two were bulls, and proved of great value, thus showing indisputably that it is not requisite to mix the blood of the different kinds of the same race of animals in order to keep them from degenerating."

In the first volume of the "Hereford Herd Book" is a portrait of the closely in-bred Cotmore (376), winner of the first prize in his class at the first meeting of the Royal Agricultural Society of England, held at Oxford. He was also winner of many local prizes, and was considered one of the finest bulls ever seen. He was of very great size, as may be inferred from the fact that his live weight was 35 cwt.

With regard to cattle, therefore, I think we may fairly assume that in-breeding, for more than a century, has not, *per se*, developed in the breed of cattle those diseases and defects which are said by the objectors to invariably result from the practice.

The owners of racing studs have not followed the practice of in-breeding so closely as the owners of stud herds of shorthorns. Still the English racehorse, the most beautiful, the most symmetrical, and the swiftest animal in the world, is greatly in-bred. For a long time the breeders of racehorses have been fully alive to the value of pedigree, and it is always considered a deal in a colt's favour if he should possess in his pedigree the union of several strains of one line of stout running blood. Of European nations, the English owners of racehorses were the first to perceive the value of pedigree; but in the deserts of Arabia its value in breeding horses

was known at a very early date of the world's history, and purity of blood was held in the greatest estimation.

The Bedouin Arabs possessed five great breeds—namely, the Kehilan, Seglawi, Abeyan, Hamdan, and Hadban. The Kehilan is the fastest, though perhaps not the hardiest, breed. They bear a close resemblance, in appearance, to the English racehorse. The Darley Arabian, perhaps the only thoroughbred Anizeh horse in the English Stud Book, was a Kehilan horse, tracing his pedigree through the sub-breeds, K. Ajus, and K. Rus-el-Fedawi, the latter being one of the three best strains of the Kehilan.* The Godolphin Arabian was derived from an outside breed named Jilfan, through the sub-breed J. Stam-el-Bulad. Omar Pasha took great pains to ascertain this fact.

It is worthy of notice that the greater number of our best English racehorses have a very large infusion of the blood of the Darley Arabian. The following is the pedigree of "Flying Childers," from which it will be seen that he was a remarkably in-bred horse:—

* "The Bedouins of the Euphrates."

FLYING CHILDERS.	Darley Arabian	Caleless	Spanker	Darcy Yellow Turk	
				Morocco Mare	Morocco Barb Old Bald Peg (Arab)
	Betty Leedes	Sister to Leedes	Barb Mare		
			Leedes, Arab	Spanker Morocco Mare	
			Daughter of	Spanker Morocco Mare (Spanker's own dam)	

As an illustration of the way the English racehorses are bred, I cannot do better than give the following quotation from a letter I received from the late Dr. Bathe, of Dandenong Grange, a gentleman thoroughly well versed in the pedigrees of our most celebrated racehorses, and well acquainted with the principles of breeding, and himself a breeder of racehorses. He says:—"I do not think a better example can be found of excellence, both on the turf and at the stud (the latter being proved through so many generations), than the one that has been called the 'Ace of Trumps' of the stud book, viz., 'Waxy.' In him there is a concentration of good blood. On his sire's side he is a direct descendant from the Darley Arabian (the fountain head from which our

English thoroughbred horse takes its excellence), as his sire, 'Pot8os,' was a son of 'Eclipse,' and 'Eclipse' was a grandson of 'Squirt,' who was a grandson of the Darley Arabian. Another strain of the Darley Arabian blood came in on 'Pot8os's' dam's side. On 'Waxy's' dam's side the Darley Arabian was returned to by several strong infusions. 'Maria' had two strains of his blood, one of them by 'Blaze,' son of 'Flying Childers,' son of the Darley Arabian; and her dam, 'Lizette,' had also two strains of his blood by her sire, 'Snap,' who was a grandson of 'Flying Childers.' So that 'Waxy' had five fresh infusions of the Darley Arabian blood through his dam. Now, let us take 'The Baron,' winner of the St. Leger, 1845, and the Cesarewitch of the same year. At the stud he was the sire of 'Stockwell,' 'the emperor of stallions.' 'The Baron' was considerably in-bred to 'Waxy.' He was by 'Birdcatcher' from 'Echidna,' and they were grandson and granddaughter of their own brothers, 'Whalebone' and 'Whisker,' sons of 'Waxy.' Another good stout racehorse, and undoubtedly the best stud horse of his day, was the great grandson of 'Waxy'—'Touchstone,' by 'Camel,' son of 'Whalebone,' his dam 'Banter,' by 'Master Henry,' who was by 'Orville,' grandson of 'King Fergus,' son of 'Eclipse;' and 'Banter's' dam was by 'Alexander,' son of 'Eclipse.' Here we have an instance of considerable in-breeding to 'Eclipse,' the direct male descendant from the Darley Arabian, through Bartlett's 'Childers.' The 'Joe Andrews' line, for the last six generations, was bred in-and-in to the Darley Arabian. The advantages derived from this system are the production of the very best animals, both on the turf and at the stud. Uniting

the lines of the blood of 'Waxy' again succeeds. 'Stockwell' got all, or nearly all, his best racehorses out of 'Touchstone' mares, such a union concentrating the blood of the Darley Arabian."

In "Blue Gown," winner of the English Derby, 1868, we have another instance of in-breeding. His sire, "Beadsman," came of a union of the "Joe Andrews" and "Waxy" lines. "Beadsman" was by "Weatherbit," who united the lines of "Joe Andrews" and "King Fergus." "Miss Letty," "Weatherbit's" dam, was closely related to "Orville," great grandson of "Eclipse," on the side of both sire and dam. "Beadsman's" dam, "Mendicant," inherited the same blood, through "Waxy" on her sire's side and "Joe Andrews" on her dam's side. "Blue Gown" got a double infusion of the Darley Arabian blood through his dam, "Bas Bleu."

Another case of successful in-breeding was the Irish horse "Barcaldine," foaled 1878. He was by "Solon," from "Ballyroe," by "Belladrum," her dam "Bon Accord," by "Adventurer" out of "Solon's" dam, by "Birdcatcher." "Barcaldine's" great granddam was, therefore, the dam of his sire. He won four races as a two-year-old, four races at three years old, did not start as a four-year-old, and won four races at five years old, they being the only events he started for in those years.

The stud book contains a great many such illustrations of in-breeding, but what I have given will be sufficient to show the mode of breeding adopted by owners of thoroughbred studs.

In Darwin's "Descent of Man," I find the following note respecting the effect of in-breeding on the modern

English racehorse :—"During the last eleven years a record has been kept of the number of mares which have proved barren or have slipped their foals, and it deserves notice, as showing how infertile these highly-nurtured and rather closely inter-bred animals have become, that not far from one-third of the mares failed to produce living foals." I do not think this result can fairly be attributed to in-breeding. When we consider the thoroughly artificial life of an English racehorse, the treatment to which he is subjected as a foal, and the severe strain on his constitution during his career on the turf, the wonder is that the proportion of infertile instances is not greater. If a stallion has made a great name on the turf, he is, in many instances, suddenly put to the stud, without being allowed sufficient time for his constitution to recover from the effects of his training and racing. If he is a fashionable horse, he may be called on to serve fully double the number of mares that he should have ; and to keep up his strength he is fed on the most stimulating food. Mares, as a rule, are a shorter time on the turf than stallions, but they are often taken from the training stables and put to the horse, and yet such unions very frequently prove fertile. I cannot help thinking that barrenness is more owing to the artificial mode of rearing racehorses than even the training and racing. In Australia, where, owing to the climate, the thoroughbred stock are kept in a much more natural state than in England, barrenness is not nearly so frequent. Years ago, when racehorses were turned out to grass at the end of the season, it was still less frequent than at present. So far from in-breeding causing degeneracy, we have

seen that our best examples of the English racehorse are considerably in-bred. The test to which a racehorse is put is so severe that, if there is any truth in the statement that in-breeding leads to degeneracy and weakness, its effects should have long ago been plainly apparent; and yet we find, after centuries of in-breeding, and the trials of the animals becoming more severe every season, that those horses which are the most in-bred to certain ancestors are the best, both on the racecourse and at the stud.

Though in-and-in breeding has not been so frequently practised by sheep-owners as by the breeders of stud cattle, still instances are frequent in which the practice has been followed for many years by skilled flockmasters, and with exceedingly good results. Mr. Darwin notices the excellent flock of Leicesters owned by the Messrs. Brown, "who, during a period of fifty years, had never infused fresh blood into their flock." Another instance of long-continued in-breeding is given by Mr. Spooner in his "Essay on Sheep"—namely, the Leicester flock owned by Mr. Val. Barford, of Foscote, near Towchester, who kept the pedigree of his flock from the time of Bakewell, in 1783, and who, from 1810, had bred entirely from his own sheep, without an interchange of male or female from any other flock. Mr. Barford says that his sheep, "being bred from the nearest affinities, commonly called in-and-in breeding, have not experienced any of the ill effects ascribed to the practice." From *The Field* I learn that this flock was bred in the same manner until Mr. Barford's death, when it numbered upwards of 200 breeding ewes and a large number of rams of different ages. For upwards of 70 years it

had been bred without the intermixture of any outside strain of blood.

Mr. Barford stocked his land very heavily, and neither used corn nor cake for feeding. His wethers would average 20 lbs. per quarter at 18 months old. His rams always met with a ready sale.

The "Maz" flock, in France, is another instance of in-breeding. A description of this flock is given in a letter from General Baron Geron de L'Ain (published in "Bulletins de la Société d'Acclimatation," 1860). At that time the flock had been in existence for sixty years, during which time it had been bred within itself, not a single ram of strange blood having been introduced. It was formed of pure Spanish merinos, selected from the flock of an Intendant of the *guard du corps* of the King of Spain, who had the privilege of obtaining sheep from the most ancient and distinguished of the royal flocks. This was the only flock in France that could compete on terms of equality with the fine wool of Germany. It took the first gold medal at Sedan in 1823, also first-class medals in London and Paris. The flock was composed of 2,400 sheep, but, on the dissolution of the society, it was reduced to 500 head. The rams from this flock have been used in many of the finest merino flocks in Europe, and have been very highly esteemed by stud flock owners. The wool realized five francs per kilogramme in the grease, being about double the price paid for the wool from Rambouillet and Brie.

It is hardly necessary to go outside Australia for an illustration of in-breeding having been practised for a long series of years without any ill effects resulting. Sir William Macarthur's celebrated Camden merinos were

originally from a very few sheep imported from the Cape of Good Hope in 1797, to which were added another very small lot from George III.'s merino flock, imported in 1804. Since that time the flock has been bred entirely within itself, no fresh blood having been introduced. The descendants of these sheep are now in the possession of the Hon. Wm. Campbell, and only rams bred in the flock are used as sires. They are, as they have always been, extremely healthy, and their wool still possesses the beautiful quality for which the flock has ever been famous. It has fallen off in quantity, certainly, but that is mainly owing to mismanagement and bad treatment. Mr. Spooner, in the essay already quoted from, mentions the following instance of in-breeding:—"With respect to sheep, M. Beaudouin gives the numbers of a flock of sheep bred in-and-in for a period of twenty-two years without a single cross, and with perfectly successful results, there being no sign of decreased fertility and the breed being in other respects improved."

The late Mr. John Murray, of Mt. Crawford, South Australia, formed his flock in 1842, and ever since it has been bred from sires produced in the flock. The rams from this flock are now held in the highest estimation by flockmasters for their robust constitutions and profitable qualities.

The merino sheep-breeders of America commonly practise in-breeding, and their sheep have sturdy frames and are said to be exceedingly robust. The value of pedigree is fully appreciated by American sheep-breeders, and nowhere else that I know of is there a public stud book for sheep. From this register we learn that instances of in-breeding for many genera-

tions are common. The pedigree of the celebrated ram "Gold Drop," bred by Mr. E. Hammond, of Vermont, whose sheep have been in-bred for nearly seventy years, is a good example of what may be accomplished by a skilful use of in-breeding. The large sum of \$25,000 was refused by Mr. Hammond for this ram.

Of his breeding Dr. Randall says:—"It will be seen that 'Gold Drop,' after the recurrence of seven generations, traces every drop of his blood to two rams and three ewes." In alluding to the mode of breeding practised in this flock, he remarks:—"Mr. Hammond's whole flock has been bred with the same disregard of consanguinity, and yet all the time, since his purchase of its foundation, has been increasing, not only in amount of wool, but in size, bone, spread of rib, compactness, easiness of keep—in short, in all those things which indicate improved constitution. Nor has there been the least tendency towards that barrenness which has been thought by some to be one of the results of in-and-in breeding. Everyone who draws rams from his own flock, and breeds from the best, will inevitably find himself an in-and-in breeder. The best beget the best. If a ram of surpassing excellence as a sire arises and makes a decided improvement in the flock, he is, of course, coupled with the best ewes, and all the choicest young animals of the flock are soon of his get, and consequently, leaving out of view all previous consanguinity, are as nearly related as half-brothers and half-sisters." Dr. Randall also says, in alluding to this subject:—"I could add hundreds of examples, both in Europe and the United States, to prove that in-and-in

breeding does not, *per se*, produce degeneracy." I think it is scarcely necessary to bring forward any further proofs to show that, in skilful hands, in-breeding has resulted in great improvement being effected in many breeds of our domestic sheep, without producing any of the evil effects which are said to result from the practice.

Coursing men have not been much in favour of close in-breeding, though in some private kennels the practice has been followed to some extent. Those who breed dogs for public running have objected to in-breeding; and as the fastest and best dogs in Great Britain contend for the great prizes of the leash, the inference may fairly be drawn that in-bred dogs are inferior to those not so bred. It is contended, however, by many good sportsmen that the in-bred dogs (which are mostly, if not always, found in private kennels) are fully as stout, if not perhaps quite as speedy, as the dogs that run for public money. It is difficult to arrive at any just conclusion on this subject, as so many breeders of greyhounds only breed and run their dogs for sport, and never compete in public. If in-breeding had a bad effect on the constitution of the greyhound, it is difficult to understand why so many good sportsmen have bred their dogs in this manner. In Mr. Thacker's valuable work on coursing, I find the following remarks bearing on the subject:—"Mr. Drake, of Norfolk, bred in-and-in for 20 years without losing bone, size, symmetry, or courage. (He had previously bred in with Mr. Crowe's stock.) Selection is the most important object: without that our labours are lost."

Pig-breeders are strongly opposed to close breeding, and all the authorities which I have consulted condemn the practice. In an excellent work on "The Pig," by Wm. Youatt, enlarged by Saml. Sydney, I find the nearest approach to in-breeding I have met with. In speaking of the small Yorkshire breed, the author remarks of a particular strain:—"They are as pure as 'Eclipse,' being descended from the stock of Earl Ducie and Mr. Wyley, of Bransby." Of another breed, he remarks:—"The improved Essex, with symmetry, have more size and constitution than the original Essex-Neapolitan, and this has been maintained without any crosses for more than twenty years by judicious selection from the three families." Of the pigs shown every September at Keighley, in Yorkshire, he makes the following remarks:—"Many of them have pedigrees extending back ten or a dozen generations, some almost as far back as the 'Felon Sow of Rokeby.'" The breeders of prize pigs appear to place the greatest value on purity of breed, but strongly condemn in-breeding, though in maintaining this purity of breed they are obliged, unconsciously, to practise in-breeding to some extent.

The late Mr. Robert M'Dougall, of Arundel, imported Berkshire pigs from England in 1859. He purchased them from a Mr. Hull, of Watereaton, near Oxford, who had for the previous 30 years bred from the same strain. In 1870 Mr. M'Dougall again imported a few Berkshires, and these are the only admixture of outside blood in his stock for nearly 30 years. Mr. M'Dougall told me that his pigs, though in-bred, showed no falling off in size, shape, constitution, or quality, and they were excellent breeders.

CROSS-BREEDING.

Though the principle of in-and-in breeding has firm adherents in nearly all the most successful stud breeders of our domestic animals, the opposite practise, cross-breeding, has been strongly condemned in a permanent flock by nearly all whose opinion on the subject is of any weight. By cross-breeding is meant the pairing of animals belonging to distinct breeds. In some instances it is held by very strict breeders that a union between animals showing extreme points of difference, though of the same breed, is cross-breeding. Thus, a union between the finest specimen of the Saxon merino and the strongest-woolled Rambouillet would be considered, by some breeders of fine-woolled sheep, as little short of cross-breeding, though both animals are pure merinos. The breeders of racehorses would decline to put their mares to the highest caste Arab in the desert, though the English blood horse is descended from the Arab.

The effects of cross-breeding in the human race have been so marked that the most careless observer cannot but have noticed them. On this subject, Mr. Darwin says:—"Travellers in all parts of the world remark on the degraded state and savage disposition of crossed races of men. That many excellent and kind-hearted mulattoes have existed, no one will dispute. A more mild and gentle set of men could hardly be found than the inhabitants of the island of Chilæ, who consist of Indians commingled with Spaniards in various proportions. Many years ago I was struck with the fact that in South America men of complicated descent—between negroes, Indians, and

Spaniards—seldom had, whatever the cause might be, a good expression.” Livingstone makes a similar remark about the half-caste men of the Zambesi. A native once said to Livingstone—“God made white men, and God made black men; but the devil made half-castes.” In reference to this subject, Darwin also says:—“When two races low in the scale are crossed, the progeny seems to be eminently bad.” Humboldt also speaks in strong terms of the bad and savage disposition of the Zambas, as the half-castes between the negroes and Indians are called. The following instance of the effect of a single cross is given by Dr. Knox:—“By the cross of a white man with a mulatto woman of not very deep dye, dark blood has been observed to hold its ground in the descendants for 150 years, although all the subsequent intermarriages were with the one race—the fair.”* Dr. Knox denies the possibility of any hybrid race supporting itself. He affirms that it will return to one or other of the primitive forms, and he gives the following instance in support of his opinion:—“The Scandinavian, or Saxon, was early in Greece, say 3,500 years ago. This race still exists in Switzerland, forming its Protestant portion. While in Greece, it contributed mainly, no doubt, to the formation of the noblest of all men—the statesmen, poets, sculptors, mathematicians, metaphysicians, and historians of ancient Greece; but from that land nearly all traces of it have disappeared—so, also, from Italy. It is gradually becoming extinct in France and Spain, returning and confined once more to those countries in which it was originally found.” He cites war and slavery as the elements of amalgamation, whereby mixed races arise

* “Races of Man.”

and are maintained till the impure fall before the pure race, and perish by a kind of decreasing vitality. He also makes this interesting remark:—"This absorption, however, must ever affect subsequent forms and mental conditions of the victors." In the cross with the negro and the white race, it is found, in Jamaica and South Carolina, that the mulattoes cease to be reproductive after the third generation, and they frequently die early. I have heard the same remark made with respect to the mulattoes of Barbadoes by persons who have resided a long time on the island.

On the other hand, it is admitted that in Louisiana, Florida, and Alabama the mulattoes are fruitful and robust. It is difficult to arrive at a satisfactory settlement of this question, for none of the authorities state positively that mulattoes, bred among themselves, have proved fertile for three generations. In all half-breds, there is always the pride of race inclining them to the superior type. There is, however, one remarkable exception in favour of a crossed race. The province of St. Paul (Brazil) has been peopled by Portuguese and inhabitants of the Azores, from the old world, who have formed alliances with Gayanazes, a hunting and peaceful tribe, and with the Canjos, who are warlike and agricultural. From these unions there has sprung a race whose men have always been remarkable for their fine proportions, their physical power, indomitable courage, and endurance of fatigue, while the beauty of the women has risen to a proverb. The highest moral development, as well as the most remarkable intellectual movements, appear to come from St. Paul. This superiority has been attributed to the influence of

morality, the unions from the first having been regularly contracted, and the issue of such unions being consequently looked upon as equal to the white.*

The owners and breeders of racehorses have, perhaps, a greater reverence for purity of blood than any other class of men. They would doubtless look upon that person who would be rash enough to recommend a cross of the Cleveland as a means of improving the breed of racehorses as simply an idiot. Occasionally a brilliant cock-tail (as a horse with a stain in his pedigree is called) appears on the turf; but though he may have shown every quality of courage, endurance, speed, and weight-carrying power, combined with size and beauty of form, still no one would dream for a moment of using such an animal in a high-class stud. Cock-tails cannot cope with the thoroughbred horse, though, at rare intervals, a brilliant exception appears. One of these, "Intrepid," won the Chester Cup, and another, "Hotspur," ran second for the Derby. Yet, their racing career once over, they were comparatively worthless, and only in request to breed coachers and hackneys. The cock-tail often had only $\frac{1}{16}$ th or $\frac{1}{32}$ nd of impure blood in his veins, and sometimes the stain was even more remote; but horsemen and racing men knew from experience that the blot was there, and sooner or later it would show—that it was only courting discomfiture and loss to breed racehorses from a cock-tail, no matter how brilliant his career on the turf, or how remote the stain in his pedigree. Racing men are eminently practical, and but little given to sentiment. If winners could be bred from cock-tails, they would not, from any

* "The Human Species," by A. de Quatrefages.

sentimental feeling about purity of blood, hesitate to employ them as sires when they were possessed of the necessary qualities. The reverence that racing men have for the best and purest strains of blood, is the natural result of the glorious qualities of the breed having been demonstrated in many a desperate race, and through a long line of grand performers. The racehorse and the game-cock are put to the most severe test of all animals, and breeders of both have found, through centuries of practice, that nothing but the pure blood can be depended upon. In fact, the exhibition of any sign of cowardice, in either a racehorse or a game-cock, at once gives rise to the confidently expressed opinion that there is a flaw in the animal's pedigree. At one time it was thought that crossbred horses made the best hunters and steeplechasers, but it is now acknowledged that the blood horse can travel through dirt and carry a heavy weight to the end of a severe run in a way that no crossbred horse could hope to accomplish. In that bastard sport, steeplechasing, the introduction of the thoroughbred horse into English steeplechases has made it impossible for the old-fashioned crossbred horse to win a race. In fact, it has often been found that crossbred horses cannot withstand the severe training to which the candidates for such a race as the Melbourne Cup are submitted, without losing heart. Crossbred horses make excellent hackneys, buggy horses, and chargers; but for the supreme test of the animal's courage, speed, and endurance, which is only to be found on the racecourse, nothing but the thoroughbred will stand the ordeal.

For many years it has been attempted to establish a

sub-breed of horses in England, named the "Cleveland," but though English horse-breeders are the most skilful in the world, I think it cannot be said that the attempt to form this sub-breed has proved a success. I have seldom found a true lover of the horse willing to breed from a Cleveland sire. They have often fine forms, great size, good carriage, and large bone; but the bone is spongy, their joints are round and fleshy, and they have little courage. They are fit, when carefully fed and pampered, to draw a carriage about well-made streets for a couple of hours a day at the rate of seven or eight miles an hour. I have heard that it is necessary to have recourse to the thoroughbred strain every now and again to prevent the breed from utterly degenerating. The roadster stallion is another crossbred horse. We have had several of these horses imported into Australia, but I have never yet seen the improvement which it was claimed they would effect on the Australian horse. The best of these imported roadster stallions that I have seen have been Yorkshire horses, and they are said to have a larger infusion of thoroughbred blood in them than any other class of roadster.

The American trotting horse is an instance of what skill in training can accomplish in developing a peculiar faculty when carried on through a long series of generations. Many of these horses have an undoubted strain of base blood in their pedigrees, which is shown by their coarse head and limbs, heavy manes and tails, and thick, round joints. The best horses of this class are true English thoroughbreds, and the best stock we have got from American horses are those that are true-bred blood horses. I find that some of the best authorities in

America are strongly in favour of pure blood. Mr. J. C. Simpson says on this head* :—" I have held tenaciously to the belief in the efficacy of thoroughbred blood in the trotter for fully twenty-five years, and now (1883) the granddaughter of a thoroughbred mare occupies the highest place in the record, and others of the same degree of consanguinity to the royal blood close up in the calendar." I am informed by Mr. J. J. Miller, of Melbourne, that Mr. Simpson is recognized in San Francisco as one of the best authorities on all that relates to trotting horses.

Owners of stud cattle of all breeds are almost as great sticklers for purity of blood as the breeders of racehorses, and their opinion of the value of such purity is shown by the high-sounding titles with which their favourites are dubbed. So many are the kings, emperors, dukes, marquises, &c., that it has been found necessary to mark their individuality by adding a number to the title in order to prevent confusion. A shorthorn bull with a flaw in his pedigree would be of very little value, even though his size, form, and quality were all that could be desired.

The history of what has been termed in reproach the "Alloy" family, or tribe of shorthorns, is something of an exception, for at first they realized very high prices. The "Alloy" strain was written into notoriety, and for a short time was held in great repute, but the result of many years' experience appears to be that the "Alloy" stock had no value except what was conferred on them by the shorthorn blood, and in spite of the Galloway strain. The origin of this cross is given in the American edition

* "A Natural and Plain Method of Horse-Shoeing."

of "Youatt on Cattle." It is to the following effect:—
"Col. O'Callaghan, of Heighington, possessed two red polled Galloway cows, which he put to Mr. Colling's bull, 'Bolingbroke.' One of them dropped a bull calf, which, according to agreement, became the property of Mr. Colling for the use of the sire. He was kept a bull till about a year old, when 'Johanna' (a very moderate shorthorn cow), not having bred for two years, was put to run with him. She proved to be in calf, and the young bull was then castrated, never having been used to any other cow. 'Johanna' dropped a bull calf, and he, in turn, was put to run with 'Phoenix' (the dam of 'Favourite'), who had been barren for three years. She proved in calf, and dropped 'Lady' in 1796, and from 'Lady' sprung the tribe of the 'Alloy.' The cross was never intended as an experiment to improve the shorthorn breed, but was merely a trial to get two old cows to breed. Mr. Colling thought so little of the 'Alloy' as an improvement, that he confined the family to 'Lady' and her daughters. He never crossed the 'Daisy' or 'Duchess' tribes with it. The 'Alloy' was always extremely deficient in milk, and at Mr. Colling's sale, in 1810, they, being in very fine condition, sold well. This account of the 'Alloy' family was obtained from Mr. Bates, of Kirklevington, who had it from Mr. Colling, and who knew the truth of it of his own knowledge. Even after so many generations of breeding back to the shorthorn, the Galloway blood will at times still assert itself in the black muzzles of the descendants of the cross."

The following interesting instance of the effect of a cross is related by Dr. Browne:—"Dr. White, a wealthy

educated physician and farmer in the State (New York), became possessed of a full-blooded Ayrshire cow, which, about 20 years ago, he put to a full-blooded Durham white bull. Subsequently he bred continually in-and-in towards the cow. It was remarked that for many years, say 12 or 15, the progeny leaned uniformly towards the cow, whose colour and type were frequently reproduced. Suddenly, a few years ago, the colour and type of the bull exhibited themselves, and from that moment the impairment of constitution became manifest, and the extinction of the stock hastened.”*

An instance of the after effect of a cross is given in Pringle's “Live Stock of the Farm,” in which a cow, that had at least six crosses of high-class and well-known shorthorn bulls in her pedigree, produced a calf which was a perfect West Highland in colour, &c. There could be no mistake about the breeding of the calf, for there was not a West Highland bull in the district. The explanation is, that about twenty-five years previously the owner became possessed of a very handsome West Highland heifer, which he put to a high-bred shorthorn bull. The descendants of that West Highland heifer were bred in their successive generations from first-rate shorthorn bulls, and they presented all the appearance of shorthorns until the seventh generation, when the produce bred back at a bound to the original West Highland.

The effect of an extreme cross in the first conception on the future progeny is known to most stock-breeders. The well-known cross of a mare with a quagga has been often cited. The Earl of Morton bred from a male quagga and a mare of seven-eighths Arabian blood. The

* “*Trichologia Mammalia.*”

result was a female hybrid, displaying in form and colour her mixed origin. The mare was then given to Sir Gore Ousley, who bred from her, first a filly and afterwards a colt, by a fine black Arabian horse; but both these, in their colour and in the hair of their manes, strongly resembled the quagga.

Another instance is related by Dr. Wollaston,* of a black and white sow, owned by Mr. D. Giles, which after littering to a wild chestnut boar, was put, some time after the death of the latter, to boars of quite a different variety, and yet the offspring were covered with chestnut marks so as closely to resemble the dead wild boar.

The same effect of an extreme cross is also shown in cattle and sheep. A black cow, descended by sire and dam from a herd well known in Angushire, was crossed when a heifer by a well-bred shorthorn bull. She subsequently became the property of a gentleman who exhibited her successfully on various occasions, and, being desirous of having a black polled calf from her, she was put to a prize polled Angus bull. The calf, however, was a roan horned calf, exactly resembling the shorthorn bull by which she had been first served. The cow had travelled by rail, and there was no other bull about the place but the prize Angus. In sheep we have a similar instance. "Dr. Harvey, on the authority of Mr. M'Combie, stated that six very superior black-faced horned ewes were tupped, some of them by a Leicester and others by a Southdown ram. Next year the same ewes were put to a very fine pure black-faced horned ram of the same breed as the ewes themselves, and the lambs thus begotten were all, without exception,

* "Philosophic Transactions," 1821.

polled and brownish in the face. The same thing occurred in the year following, the ram used being another of their own breed.”*

A somewhat similar instance is recorded of a flock of sheep kept by Dr. W. Wells in the island of Grenada. The ewes, which were white and woolly, were put to a ram of a chocolate colour and as hairy as a goat. The progeny bore a strong resemblance to the male parent. The next year Dr. Wells obtained a ram of precisely the same breed as the ewes, but the produce exhibited a distinct resemblance to the former ram in colour and covering. The influence of a previous impregnation has been frequently observed in the human race, in cattle, pigs, and dogs, and it is very frequently seen in poultry.

Cross-breeding for the butcher is frequently practised by stockowners, and with good results. The cross of the polled Angus on shorthorns are very fine. Shorthorns and Herefords make a good cross for the butcher, but it has been found wise to stop at the first cross, or to use sires of only one of the pure breeds.

The history of the greyhound furnishes us with the most notable instance of an extreme cross having been employed to obtain a certain object. Great skill and patience was employed in conducting the experiment, which is said to have answered all expectations: though, to judge by the opinions expressed by some very good authorities, it is questionable if the result is so advantageous as the advocates of the cross would have us believe. The object sought was to give the greyhound greater determination and courage, and this was sought by making one cross with the pure bulldog and

* Pringle's "Live Stock of the Farm."

then breeding back to the greyhound again. The experiment appears to have been tried by a great many coursing men, and the story of their efforts to gain the desired effect reads very like introducing a defect into a perfect breed, and then endeavouring, by many years of careful and skilful breeding, to eliminate that defect. Mr. Thacker, in his work on coursing, gives the merit or demerit to Lord Oxford of having been the first to try this cross. He made many experiments, and crossed with the Italian greyhounds, lurchers, and lastly, with bulldogs, and all with the view of "improving" the breed. After a good many generations of breeding back to the pure greyhound, the bulldog strain were sufficiently fleet to use for coursing, and by breeding to the finest greyhound sires a family of celebrated greyhounds was at last established. "Vraye Foy" was one of this strain. He was fourteen times removed from the bulldog, and consequently possessed $\frac{1023}{1024}$ ths of pure blood. Of the bulldog cross, Mr. Thacker says:—"I do not intend to say that the cross are deficient in innate courage. Their defect is chiefly in want of wind; they have also a cunningness of propensity from nature, which the want of wind soon brings into operation." That some grand performers have come of the breed the coursing records bear witness; but it is now generally admitted by coursing men that dogs with a large infusion of the bulldog cross show a greater tendency to run cunning than the pure greyhound.

The attempt to establish a breed between the bulldog and the terrier cannot be said to have succeeded, though bull-terriers have been bred for very many generations.

It has always been found necessary to have recourse from time to time to one or other of the parent breeds. Bull-terriers, like greyhounds with the bulldog strain in them, are marked by their tendency to a brindle colour. In dogs, as in cattle, a brindle colour would appear to be the mark by which nature distinguishes a crossbred animal.

Cross-breeding in sheep for a permanent flock has been condemned by almost every practical sheep-breeder who has written on the subject. In no instance has the line of demarcation been more distinctly drawn than between the merino and the other breeds. Dr. Browne* is one of the most decided opponents of the practice. He gives, as the golden rule, that sheep-breeders should never cross the two species of sheep, namely, the woolly sheep and the hairy sheep. He concludes his remarks on this subject with the following warning:—"Therefore, let no American sheep-breeder flatter himself with the hope or expectation that, by breeding to a superior race, he will ever be able entirely to obliterate the defects of an inferior one. If he does so, he will find to his cost and discomfiture that the obliteration is not real but apparent, and that he has entailed a stigma upon his stock which no art nor time can wholly obliterate." Of the practice of commencing a permanent flock with crossbred sheep, he says:—"Are crosses of hairy and woolly sheep recommended to save expense of outfit? No outlay of capital can justly be considered as extravagant which has for its object to preserve a permanent breed of stock. Is it to save time? It is time lost, and not time saved, to commence by such abnormal crossing." Mr. Spooner also alludes to the

* "*Trichologia Mammalia*."

subject. He says:—"We may start, then, with this principle, that to cross for crossing's sake is decidedly wrong; that, unless some specific purpose is sought for by crossing, it is far better to cultivate the pure breed." Dr. Knox is still more decided in his opinion against cross-breeding. He says:—"By no effort saving that of a constant, never-ceasing intermixture or draft on the pure breeds can a mixed breed be maintained; leave it to itself, and it ceases to be."* M. de Quatrefages remarks on this subject:—"All breeders know that a determinate and settled race cannot at once be produced by crossing;" and, as illustrating the difficulties attending the experiment, he states that, for more than twenty years, M. Malingie-Nouel failed in settling his Charmoise race of sheep so that it might serve for fresh crossings; and that, after being established for nearly thirty years, it still gave irregular products. The ancient breed of Southdown sheep were improved entirely by careful selection. Crosses were at first made with the Leicester breed, but they resulted in utter failure. A trial was then made with the merino, it being thought, as they were both fine-woolled sheep, the cross would be more successful; but, as in the cross with the Leicesters, the experiment was a failure. About the beginning of the present century, Mr. Ellman, of Glynde, effected great improvements in the breed by careful selection; and, by keeping in view a definite purpose in the choice of his breeding stock, he ultimately effected the improvement of the Southdown sheep.

Cross-breeding sheep for the market has been extensively practised by Australian flock-masters, the cross

* "The Races of Men."

most in favour being that between the merino and the Lincoln. They have a large carcase, have a propensity to fatten, the fleece is at present of almost as much value as merino wool, and it weighs heavier than that of a merino sheep. Several experienced sheep-farmers are keeping up flocks of crossbred sheep, the general principle adopted being to take two crosses of merino blood to one of Lincoln. The sheep in the best of these flocks were originally of great excellence and the rams used are of the finest, but this system of breeding has not been long enough established to say for certain if the attempt to keep up the standard of excellence will succeed.

Of the benefits to be derived from cross-breeding in sheep, Mr. Spooner says * :—" Although the benefits are most evident in the first cross, after which, from pairing the crossbred animals, the defects of one breed or the other, or the incongruities of both, are perpetually breaking out, yet unless the characteristics and conformation of the two breeds are altogether adverse to each other, nature opposes no barrier to the successful admixture, so that in the course of time, by the aid of selection and careful weeding, it is practicable to establish a new breed altogether." In summing up on the results of cross-breeding, he remarks:—" Let us conclude by repeating the advice that, when equal advantages can be attained by keeping a pure breed of sheep, such pure breed should unquestionably be preferred, and that although crossing for the purpose of the butcher may be practised with impunity, and even with advantage, yet no one should do so for the purpose of establishing a new breed unless he has clear and well-defined views of the object

* "Journal of the Royal Agricultural Society."

he seeks to accomplish, has duly studied the principles on which it can be carried out, and is determined to bestow, for the space of half a lifetime, his constant and unremitting attention to the discovery and removal of defects."

Perhaps the most successful attempt to establish a new breed from widely differing originals was that made by M. Malingie-Nouel, director of the Agricultural School of La Charmoise Loire et Cher, in 1830. He found the native breeds of sheep so extremely deficient in those qualities which render the English breeds so profitable to the farmer that he decided to commence a series of experiments with a view to their improvement. He carefully studied the various breeds of English sheep, and eventually selected the new Kentish sheep as the animal best suited to his purpose. This breed of sheep was established by Richard Goord from nine ewes and one ram of the Romney Marsh breed, and a few rams obtained from Mr. Wall. They were deeply in-bred and were improved without crossing. M. Malingie-Nouel purchased some New Kent sheep, for which he gave a high price, but he found that their acclimatization presented much greater difficulties than he had anticipated. The climate, food, and treatment at La Charmoise were entirely different to what the sheep had been accustomed in England, and they did so very badly that he was compelled to abandon the attempt to acclimatize them. He next sought to improve the native race by careful selection of the breeders, combined with more generous feeding, but he found the process such a slow one, and the results obtained so indifferent, that he gave it up and determined to effect his purpose by crossing the native

race with rams of the best English blood. M. Malingie-Nouel gives the following interesting account of his experiments in crossing French ewes with English rams:—"When an English ram, of whatever breed, is crossed with French ewes, the result is that a very large proportion of the lambs resemble the dam much more than the sire, a very small number exhibit the mingled qualities of the sire and dam, while a few do not exhibit any trace of the English blood. Encouraged by the beauty of those lambs in which the qualities of sire and dam are mingled, the sheep-breeder carefully preserves the females, and when they are old enough puts them in turn to pure English rams. The produce of this second cross, as a rule, greatly resemble the sire in shape, size, and fleece. The lambs appear to be healthy, and the breeder, overjoyed at the result, is convinced that he has established an English sub-breed which will only require careful rearing and a judicious selection of the breeders to give permanence to the type. But in arriving at this conclusion he has reckoned without his host, for the lambs are no sooner weaned than their strength and beauty begin to fade away in proportion as the temperature increases with the advance of summer. Instead of continuing to thrive, they appear to decrease; they become stunted and contracted, and, even at this early period of their existence, begin to exhibit all the appearance of old age. An abundant discharge from the nose sets in, which is accompanied with frequent sneezing, and sometimes with cough. If the animal survives the autumn, he recovers a certain degree of health and lives on, but always a weakling. If the experiment is continued to the third cross with the pure English sheep

the symptoms described are produced with even greater intensity."

After many attempts with various breeds of English sheep, all of which were equally unsuccessful, M. Malingie-Nouel arrived at the conclusion that, as he could not augment the purity and heredity of the English rams, he would have to destroy the purity and heredity of the French ewes. To carry out this experiment, it was necessary to mate rams of the purest and most ancient of the improved English breeds with a family of French ewes of recent formation, or, rather, a family having, through the multiplicity of breeds of which it is composed, no decided character.

By mingling the breeds of Berri, La Sologne, Touraine, and the French merino, he obtained sheep having no pronounced character, and without fixity of type, but preserving the advantage of being thoroughly hardy and used to the conditions of life in that part of France. From a union of the ewes thus bred with a new Kent ram he obtained lambs having 50 per cent. of English blood and $12\frac{1}{2}$ per cent. of each of the French breeds named. The influence of the English blood was predominant in the produce. The lambs strikingly resembled each other, and were by some mistaken for pure English sheep. But what was still more surprising was that in breeding amongst themselves from the sheep thus obtained the produce resembled their immediate parents, without any return to the old French races from which their granddams were sprung. The breed of sheep established in the way described has been carried on ever since with great success and with as great a homogeneity as could be wished for. The flock

has been culled every year: all sheep that showed any trace of the old races from which the original ewes were derived being carefully weeded out. According to M. de Quatrefages, traces of the old races could occasionally be seen in the flock for at least twenty years after the new breed was formed.

The persons who chiefly resort to cross-breeding to establish a permanent flock are those who have kept very poor stock, those who have but little experience of sheep-breeding and wish to effect a great improvement by a short cut, or those whose vanity prompts them to the belief that they can succeed where others have failed. To the Australian sheep-farmer cross-breeding is an important matter, as there are large areas in which the most profitable animal to breed is the cross between the longwool and the merino, or the next cross to the merino, to which the name of "comeback" has been given. Crosses with Down sheep are being tried, and the produce are extremely promising as mutton sheep. In breeding crossbreds or comebacks to whatever breed, it is most important that the sire should be of pure blood and possessed of good form and fleece. It is owing to farmers using inferior rams for raising crossbreds that we see so many flocks of almost worthless sheep on small properties.

HEREDITY.—A most important principle in stock-breeding and one that demands the most careful study on the part of the sheep-breeder is heredity, or the inheritance by the offspring of the structure and qualities of the parents. On this subject Mr. Darwin remarks:—"Some writers who have not attended to natural history have attempted to show

that the force of inheritance has been much exaggerated. The breeders of animals would smile at such simplicity, and if they condescended to make any answer might ask what would be the chance of winning a prize if two inferior animals were put together." In another passage he says:—"It is doubtful whether length of inheritance in itself gives fixedness of character, though the chances are obviously in favour of any character which has long been transmitted true, so long as the conditions of life remain the same. In many cases the failure of the parents to transmit their likeness is due to the breed having been, at some former time, crossed, and the child takes after the grandparent or more remote ancestor of foreign blood."

A very striking instance of the power of heredity is shown in the Bach family. During a period of nearly 200 years, this family gave to the world a great many artists of high class, among them being 29 eminent musicians. An interesting illustration of the long endurance of a hereditary quality is given by the Rev. Isaac Taylor. In alluding to the passion of the Turanian nations for a vivid colour, he remarks*:—"This is conspicuous in the ornamentation of Etruscan tombs and vases. The colour is always brilliant, and never inharmonious. The primary colours are used in the most daring manner, but the effect is never grotesque or glaring. . . . Geographically, ancient Etruria is modern Tuscany. The blood of the mediæval Florentines was probably Etruscan, with but small alien admixture. It was at Florence that the arts revived at the earliest possible moment after the European cataclysm. The

* "Etruscan Researches."

earliest homes of art, the leading schools of colour, were at Bologna, Florence, Perugia, Siena, Lucca, and Parma, cities which belonged all of them to the old Etruscan dominion. All the great colourists have come from this region. Titian is an apparent exception, but the name of Titian is one of the commonest of the names in the ancient Etruscan sepulchres. It may almost be affirmed that, beyond the area once occupied by the Etruscan race, no colourist of the highest rank has ever been born. We may, perhaps, attribute some of the facile power and genius of these great artists to the hereditary instinct reappearing at last irrepressibly after its long eclipse."

The gipsies afford a striking instance of the long conservation of certain characteristics. They first appeared in Paris in 1427, when they were accused of palmistry and sorcery. They were excommunicated, threatened with death, and expelled the country. Such as they were on their first appearance, such they remain. Their mental and physical condition is almost without change.

Of this singular race Mr. E. L. Clark makes the following remarks* :— " All things considered, we must regard the gipsies as the most singular and remarkable people to be found on the globe. Without history, or traditions, or religion, or literature, or written language ; with nothing to bind them together but the indelible, unchangeable strain of their savage blood, they display a pertinacity of race surpassing that of the Jews. Everywhere present, from Persia to Ireland, and from Siberia to Central Africa, and everywhere oppressed, outcast.

* " The Races of European Turkey."

and despised, they have always kept separate and distinct, with a rigid exclusiveness, of which, probably, no parallel can be found. From the arctic circle to the equator, with some rare and partial exceptions, in language, in physical peculiarities, in their social and moral character, in their pursuits and habits of life, they are everywhere essentially the same. Change of food and outward circumstances work little variation in their physical type and peculiarities."

The Jews have preserved their distinctive characteristics in as great a degree as any other race. In every climate, and under all kinds of treatment, they may be at once recognized. The features of the ancient Jews, carved on the monuments of Babylonia 3,000 years ago, might readily pass for portraits of Jews of the present day. In Egypt, the striking resemblance of the Fellaheen of the Nile to the inhabitants of ancient Egypt, as portrayed in the monuments, has been noticed by every traveller who has visited the country. On this subject Dr. Henry Brugsch says* :—"Although, in so long a space as sixty centuries, events and revolutions of great importance must of necessity have completely altered the political state of Egypt, yet, notwithstanding all, the old Egyptian race has undergone but little change; for it still preserves to this day those distinctive features of physiognomy, and those peculiarities of manners and customs, which have been handed down to us by the united testimony of the monuments, and the accounts of the ancient classical writers, as the hereditary characteristics of this people." An instance of long inheritance of type is afforded in the Boulag

* "A History of Egypt under the Pharaohs."

Museum at Cairo. Writing of the statues therein Mr. Fergusson remarks:—"Nothing more wonderfully truthful has been done till the invention of photography, and even that can hardly represent a man with such unflattering truthfulness as these old portraits of the rich sleek men of the pyramid period." One of these statues, made of wood and believed to date 3950 B.C., was such an exact representation of the village chief that when it was discovered the villagers, with one accord, cried out, "Sheik el Belled" (village chief), and by that name it is known.

Dr. Brugsch gives another illustration of the persistence of a type in the presence of a race of fishermen on Lake Menzaleh, who, he believes, are the descendants of the Phœnicians, who settled in the eastern provinces of Egypt in the most ancient times of Egyptian history. Of these people, he says:—"At this day the traveller meets, on the shores of Lake Menzaleh, near the old towns and districts of Ramses and Pitom, a peculiar race of fishermen and sailors, whose manners and customs, whose historical traditions, however weak they may be, and whose ideas on religious matters prove them to have been strangers to the real Egyptians." These fishermen, he says, "are the descendants of the Phœnician inhabitants of the Tanitic and Sethroitic Nomes. These were the people who, ages ago, gave to the fortified places of their Egyptian lands, and to the lakes and canals on which they navigated, those Semitic appellations by which we well know these places from the papyrus rolls. What marks their ancient and now forgotten origin is their non-Egyptian countenance, so like the pictures of the Hyksos, with broad cheek-bones, and

with daring pouting lips, which, more than anything else, marks the boatmen of Lake Menzaleh with the stamp of a foreign origin."

M. Ribot, in speaking of his own countrymen, says:—"The French of the 19th century are, in fact, the Gauls described by Cæsar in the 'Commentaries,' in Strabo, and in Diodorus Siculus. We find all the essential traces of our national character—love of arms, taste for everything that glitters, extreme levity of mind, incurable vanity, address, great readiness of speech, and disposition to be carried away by phrases." He gives an instance of the tenacity of character in a people, as furnished by that race known successively under the names of Ancient Greeks, Byzantines, and Modern Greeks. "Amid all the vicissitudes they have undergone," Ampère remarks, "the fundamental character of the Greek has not changed; he has now the same qualities, the same defects, as of old. Pougueville found, in Morea, Apelles' and Phidias' models; he says that the chief traits of the national character and habits have been transmitted. Thus the Arcadians still lead a pastoral life, and the inhabitants of Sparta, their neighbours, have a love for fighting and an excitable and quarrelsome temper. In the middle ages, the Byzantine possessed all the essential characteristics of his ancestors." The inquiries of Dr. Broca into the stature and complexion of the French people afford a remarkable instance of the persistence of the small Iberian type in France. He divides the whole country into departments—*Noirs*, *Gris*, and *Blancs*—and he shows that the swarthy inhabitants of France at the present time are the shortest, and the fair the tallest.

The departments *Noirs* are mainly centred in the Aquitania of Augustus, and outside its boundaries the non-Aryan blood asserts itself in the small swarthy inhabitants of Brittany, in Ardeche, in Aude, and in Ariège. The departments *Gris* are massed principally in the Cellica of Cæsar, where the stature is moderate and the eyes are grey. This is probably due to the intermingling of the tall fair-haired Celt with the small swarthy Iberian. The tall light-haired Frenchman of the departments *Blancs* marks with singular accuracy those portions which were conquered by Frank, Goth, Burgundian, and Norman.*

The British people afford another instance of heredity. They are noted above all other Europeans for their passionate love for athletic sports, and this characteristic they retain, no matter in what quarter of the world they may reside. This love of athletic exercises Mr. Luke Owen Pike† traces back to the earliest inhabitants of Britain of whom we have any record, and he gives a curious illustration in support of his argument by reference to a custom that is peculiar to the British people—namely, fighting with the fists—of which he says :—"There is no evidence that the use of the fist is of Teutonic origin, or is in any way congenial to the Teutonic character. The suspicion that the custom is of Celtic origin is at once confirmed by a reference to the annals of the ring" ("Fistiana," 1865, and the "Illustrated Boxiana"). The birth places of over 700 prize-fighters are known, and the evidence thus afforded is not only quite consistent with a Celtic origin, but is

* *Edinburgh Review*, April, 1878.

† "The English and their Origin."

quite inconsistent with a Teutonic one. If the custom was an Anglo-Saxon characteristic, the majority of prize-fighters should be natives of the easternmost part of the island, while few, if any, should come from the west. So far from this being the case, only two counties on the east and south-east coasts furnish even a moderate number of pugilists. Yorkshire produces the larger number (57), and of these Sheffield and Leeds are credited with 17 and 14 respectively, and both these towns lie nearly half-way between the east and west coasts. The great bulk of English prize-fighters come from the west and midland districts. Lancashire contributes 92, Staffordshire 66, Warwickshire 118, Somersetshire 27, Notts 22, and Birmingham alone boasts 103. He also states that the south-west of England contributes not only our best prize-fighters, but the best wrestlers and the best sailors.

A remarkable fecundity has often been observed to run in families for five or six generations. This quality is often noticed in sheep, particularly among longwools; and twins, or the offspring of twins, have been proved to be more likely to breed twins than other sheep. Sheep-breeders in England have, for many years, been in the habit of selecting twins for the breeding flock in preference to others of equal quality, as the old rhyming proverb tells:—

“Ewes yearly by twinning rich masters do make;
The lambs of such twinners for breeders go take.”

There is a peculiarity connected with twins from neat cattle that has not been observed in twins from any other of our domestic animals. When twin calves are

produced, the one a male the other a female, the latter, called a "freemartin," is almost invariably barren, though the male is fruitful. When the twins from a cow are of the same sex their reproductive powers are not impaired. Of late, however, there have been several instances of freemartins having proved fertile.

The power of heredity is shown in the cross between the negro and the white man. If the progeny of such a cross are bred to the white race, it will take five successive generations before the (apparently) pure white type is seen. If, on the other hand, the progeny are bred to the negro race, so much stronger is the power of heredity in the negro blood that the pure negro type is produced in three successive generations. Berwick notices the superior power of heredity in the wild cattle in Chillingham Park as compared with ordinary domestic breeds. It was in his time the custom to put cows into the park to be served by the wild bulls; and it was noticed that they invariably produced (no matter what was the colour of the dam) white calves, with red ears and noses. What is known as cross heredity has been frequently observed in the human race and in the domestic animals. In the former, the external and intellectual resemblance of the son to the mother is much less frequent and perfect than that of the daughter to the father. French sportsmen have observed this cross heredity in their dogs; hence the saying, "*Chien de chienne, et chienne de chien.*"

The English Stud Book gives some excellent illustrations of the inheritance of vigour, speed, and endurance. "Eclipse" got 334 winners, and his son, "King Fergus," got 497 winners. "Eclipse" was the sire

of "Pot8os," who was the sire of "Waxy," *sire of "Whalebone," sire of "Sir Hercules," sire of "The Baron," sire of "Stockwell"—all grand horses and celebrated sires. "Stockwell" was the sire of "Ace of Clubs," who was sire of "King of the Ring," the sire of "First King." The peculiarities of some breeds are easily recognized. For instance, the lop ears of the "Melbourne" breed, of which we have had so many examples in Victoria.

The breeders of stud shorthorns have fully recognized the importance of heredity ; and a better recommendation cannot be given to a stud bull of high class than that he stamps his likeness on his progeny. The "Duke of Brunswick" was, perhaps, the best illustration of this power we have had in shorthorn cattle bred in Victoria. In thoroughbred horses, "Panic" was famous for bestowing his determination, pluck, and sound constitution on his male progeny, which are always easily recognized by their plain heads and frequently somewhat coarse forms. All highly-bred sires, however, do not possess this power of transmitting the good qualities of their race to their offspring. For instance, "Touchstone" and "Launcelot" were full brothers. The former had this power in a remarkable degree, even to the colour of his stock. The Launcelots, on the other hand, were of all colours, and, on the turf, were below mediocrity.

The researches of Glatton with respect to wrestlers and oarsmen show that the victors generally belong to a small number of families, among whom strength and skill are hereditary. The Vestris family is an instance of a talent for dancing having been inherited. Hereditary force, however, is always influenced by the con-

ditions of life, such as the hardships endured by the parents, a favourable or unfavourable season, and varying quantities of food given to the female parent. This fact is well known in France, where the breeders of the small horses of the "Camargne" find that, to influence the size of the progeny, it is sufficient to give the mare, during the period of gestation, a more plentiful diet than she is accustomed to in her half-wild state.* Hereditary power, however, is by no means certain, and instances are not uncommon where, of two brothers, both of robust constitution, and treated in exactly the same manner, one will exhibit great hereditary power, while the other proves a complete failure at the stud. In addition to the full brothers "Touchstone" and "Launcelot," the stud book furnishes us with several other instances, of which the most notable was "Irish Birdcatcher" and his full brother "Faugh-a-Ballagh." The former was a splendid sire, while the latter was a comparative failure. Another illustration of the difference that may exist between two full brothers was given in *The Australasian*, 14th February, 1885, in the sporting letter from home. The writer notices that "Potosi," full brother to "Foxhall," never showed any of the latter's brilliancy on the turf. He was running unsuccessfully for £50 plates when "Foxhall" was at the stud at 40 guineas a mare. The circumstance of two full brothers differing so greatly in this respect is well known to all breeders of domestic animals.

Of the power of heredity, Mr. E. B. Taylor makes the following remarks†:—"There is proof that a race may

* "The Human Species."

† "Anthropology."

keep its special characters plainly recognizable for over 30 centuries or a hundred generations, and this permanence may nevertheless remain when the race migrates from its early home, as when African negroes are carried to America or Israelites naturalize themselves from Archangel to Singapore. Where marked change has taken place in the appearance of a nation the cause of this change must be sought in intermarriage with foreigners, or altered conditions of life, or both.

Hereditary disease may be congenital or it may be a considerable time after birth before its presence is observed. Some diseases are transmitted with greater uniformity than others, and of these the most noted is scrofula in its various forms of consumption, hydrocephalus, dysentery, glandular swellings, &c. Scrofula, however, may be developed in animals that are not predisposed to it by inheritance. It may be produced by food deficient in quality and quantity, impure water, confinement in damp, filthy dwellings, want of ventilation, or any condition that lowers the vital powers. The stabled cow, the tame rabbit, the caged lion, tiger, or other wild animal, are almost invariably cut off by scrofulous affections.

Dr. Paget states* :—"That tendency to disease may be transmitted by the parent to his or her offspring before the disease has developed in that parent, so that, as we may say, that which is still future to the parent is transmitted potentially to the offspring. Nay more, the tendency which exists in the parent may never become in him or her effective, although it may become effective in the offspring, for there are cases in which a grand-

* "Surgical Pathology."

parent has been cancerous, and, although his or her children have not been so, the grandchildren have been. Let me repeat, the cases of hereditary cancer only illustrate the common rule of the transmission of hereditary properties, whether natural or morbid."

Animals inheriting certain peculiarities of structure that predispose to disease may remain healthy under favourable conditions, but they are liable to disease from the effects of exposure or hard work that would not be injurious to those with a better constitution. The following instance of this tendency is given by Dr. Miles* :— "A mare affected with ringbone that unfitted her for farm work was kept as a breeder for several years; her colts were quite uniform in form and colour, and, as they showed no indication of the disease when two or three years old, they found ready purchasers. At the age of five or six years, however, they all had ringbone to a greater or lesser extent." This indirect transmission of a predisposition to disease through a faulty proportion of parts is of frequent occurrence, and it will undoubtedly explain many of the cases of disease appearing suddenly without apparent cause, and in which an hereditary taint was not suspected, from the fact that the ancestors were not affected with the disease in any form.

ATAVISM.—Atavism, or the recurrence of the type of a remote ancestor, very often asserts itself to the discouragement of a stock-breeder, even when careful selection of the breeders has been practised for many generations. Among stockowners it is generally known by the terms "throwing back" and "breeding back."

* "Stock-Breeding"

By some writers the term reversion has been used as identical with atavism.

In breeding from mongrels (that is, the produce of a cross of two distinct races), when the type of one of the pure ancestors is resumed, the animal still preserves its mixed nature. This is proved by the possibility of its offspring of the first, second, or more remote generation reproducing the essential traits of the other pure ancestor. This is atavism. Reversion occurs among hybrids (the result of a union between distinct species), when one of the two bloods is irrevocably expelled. Sheep, and particularly merino sheep, are very liable to "throw back" to a remote type. I have seen the effect of a single cross after breeding to the pure type for over a quarter of a century. The influence of the "Alloy" cross in shorthorn cattle is a familiar instance of atavism, the black muzzles of the "Alloy" cropping up occasionally even in some very fashionably bred stock.

Mr. Darwin gives the following instance of atavism in the "*Origin of Species*," namely, the occasional appearance, in all the breeds of domestic pigeons, of slaty-blue birds, with two black bars on the wings, white loins, a bar at the end of the tail, with the outer feathers externally edged near their bases with white. He remarks:—"As all these marks are characteristic of the parent rock-pigeon, I presume that no one will doubt that this is a case of reversion. No doubt it is a very surprising fact that characters should reappear after having been lost for many, probably for hundreds of generations, but, when a breed has been crossed only once by some other breed, the offspring occasionally show for very many generations a tendency to revert in

character to the foreign breed—some say for a dozen, or even a score of generations.”

Of cases of atavism in horses he makes the following remarks:—“ I have collected cases of leg and shoulder stripes in horses of very different breeds in various countries, from Britian to Eastern China, and from Norway in the north to the Malay Archipelago in the south. In all parts of the world these stripes appear far oftenest in duns and mouse-duns (a tint which approaches to that of the general colouring of the other species of the genus). . . . For myself, I venture confidently to look back thousands on thousands of generations, and I see an animal striped like a zebra, but, perhaps, otherwise very differently constructed—the common parent of our domestic horse, of the ass, the hemionus, quagga, and zebra.”

The most extraordinary instance of atavism I have met with occurs in the human race, and is narrated by M. de Quatrefages. In 1875, a human skeleton was found in a small cave near Dusseldorf, which was distinguished by the name of the “ Neanderthal man.” This skeleton belonged to the earliest ages of the Quaternary epoch. It was at first considered that the Neanderthal man was intermediate between man and the ape, but more careful observation showed that this conclusion was hasty and erroneous. The skull presented some peculiar features. There was a great development of the superciliary processes comparing with the bony ridges possessed by the anthromorphus ape in the same place, and this made the low narrow forehead appear still more receding. The terms brutal and simian were applied to this type, as if a certain moral and intellectual inferiority was

naturally connected with it. M. de Quatrefages gives the following instances to show how worthless was this conclusion :—"At the Paris Congress, M. Vogt quoted the example of one of his friends, Dr. Emmayer, whose crania exactly recalls that of Neanderthal, and who is, nevertheless, a highly distinguished lunacy doctor. In passing through Copenhagen Museum, I was struck by the Neanderthal characters presented by one of the crania in the collection. It proved to be that of Luy Lykke, a Danish gentleman who played some part in the political affairs of the 17th century. M. Godron has published the drawing of the skull of Saint Mansuy, Bishop of Toul, in the 4th century, and this head even exaggerates some of the most striking features of the Neanderthal cranium. The forehead is still more receding, and the vault more depressed. Lastly, the skull of Bruce, the Scottish hero, is also a reproduction of the Canstadt type."* This type is widely disseminated, always fundamentally the same, and sometimes reappearing in all its primitive purity.

The following instance of atavism is from the *Gardener's Chronicle*, 1866 :—"W. J. Beasley, of Northamptonshire, crossed some carefully selected West Highland cows with purely bred shorthorn bulls. The bulls were red, red and white, or dark roan, and the Highland cows were all of a red colour, inclining to a light or yellow shade; but a considerable number of the offspring were white, or white with red ears. Bearing in mind that none of the parents were white, and that they were purely bred animals, it is highly probable that here the offspring reverted, in consequence of the cross, to the

* "The Human Species."

colour of some ancient and half-wild parent breed. It is, assuredly, an astonishing fact that the male and female sexual elements of birds, and even full-grown animals, should retain characters during several generations in the case of crossed breeds, and during thousands of generations in the case of pure breeds, written, as it were, in invisible ink, yet ready at any time to be evolved under certain conditions. What these conditions precisely are we do not know, but any cause which disturbs the organization or constitution seems to be sufficient. A cross certainly gives a strong tendency to the reappearance of long-lost characters, both corporeal and mental."

Mr. Darwin cites the following case of atavism occurring in fowls* :—"Mr. Tollet, of Betley Hall, crossed his fowls with Malays, and though he attempted to get rid of this strain he gave it up in despair, the Malay characters reappearing forty years after the cross was made."

Instances of "throwing back" to their remote, five-toed ancestors occasionally occur among our domestic horses. The Rev. J. G. Wood gives the following instance of this† :—"Sometimes a horse is born with three toes on one foot. In the autumn of 1883, while staying in Boston, Mass., I saw a horse with eight hoofs, the second (*i.e.*, the forefinger) phalanges being almost as perfectly developed as the third and fourth. The supplementary hoof, though it did not quite reach the ground was nearly as large as the actual hoof." A somewhat similar instance came under my own observation.

* "Animals and Plants under Domestication."

† "Horse and Man."

A thoroughbred mare named "Flora," the property of the late Hon. Henry Miller, had a small hoof growing on the outside of each of her hind fetlocks, and two of her colts presented the same peculiarity.

VARIATION.—All domestic animals appear to have a tendency to vary within certain limits, and it is by taking advantage of this tendency that man has been able to produce so many varieties of the animals he breeds. In no instance is this power of producing varieties that will breed true to type so well illustrated as by pigeon-fanciers. It is impossible to imagine anything more plastic than this bird in the hands of a skilful breeder. Occasionally these variations in our domestic animals appear spontaneously, and assume a very pronounced character. It has been noticed that the varieties that appear spontaneously have often a much greater prepotency than any variation that is effected by the skill of the stock-breeder. Often the divergence from the general type is owing to atavism, but in other instances they are purely spontaneous, and such exceptions to the general rule cannot be accounted for by any of the known laws of reproduction.

Several examples of extreme variation being accompanied by strong hereditary power are recorded of the human race. The most notable one is that of Edward Lambert, born in 1717, of perfectly healthy parents, who had all his life a kind of carapace, more than an inch thick, which was irregularly fissured, and which gave him the name of the "porcupine man." He had six children and two grandchildren, all of whom inherited this strange thickening of the skin, though his wife and daughter-in-law showed no trace of it. The bearded woman, who,

with her son "Esau," was exhibited throughout Australia some years ago, is another instance of a pronounced variation being accompanied by strong hereditary power. There can be no doubt that, had the means usually employed to preserve a new type in the domestic animals been used in these instances, two distinct sub-races of the human family might have been established.

The following extract from "Notes on Popular Science," by Dr. J. E. Taylor, which appeared in the *Australasian*, 4th April, 1885, shows that a variety of the human race is now in process of formation by natural selection:—"A remarkable memoir has been written by Professor A. Graham Bell upon the formation of a deaf variety of the human race. The author shows that in the United States alone there are no fewer than 33,000 deaf mutes. Many are collected in large institutions, and thus form a social world of their own, marrying and giving in marriage. This has been going on for two generations past, so that now congenital deafness is becoming hereditary; for the pupils of the asylums prefer to select each other for life partners (seeing their sign language is mutually understood) rather than outsiders."

Many instances of variation, accompanied by great prepotency, are recorded of the domestic sheep. Dr. Randall mentions a very superior ram which appeared in a flock of pure merinos in Germany, whose ears were not more than a quarter of the usual size, and from whom a "little-eared" tribe was obtained, which was highly esteemed at the time. So strongly were this ram's peculiarities transmitted to his progeny, that, after very many generations, small-eared sheep would be

occasionally found in flocks that were known to have an infusion of his blood.

The "Otter" or "Ancon" sheep is another instance of an accidental variety having the power to produce its likeness. In 1791, a ram lamb was born in a flock of sheep in Massachusetts which was entirely different from the rest of the sheep. It had short crooked legs and a long body, like a turnspit dog. From this animal a breed was obtained which in every particular resembled the original sheep, and as they could not jump over fences, it was thought they would prove valuable. The progeny were remarkably true to type, and in disposition and habit were entirely different from the original flock, and when put together in the same paddock, the Ancon sheep would leave the others and graze by themselves. This breed was kept for some time, but as superior sheep became more cultivated they gradually disappeared.

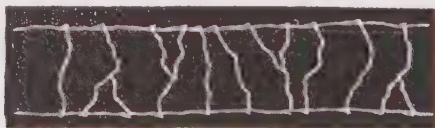
The most celebrated instance of an accidental variety of sheep is the "Mauchamp" merino, which originated in France. The following is the history of this famous variety of merino :—In the year 1828, a farmer named M. Graux, living in the *commune de Juvenecourt l'Aisne*, discovered among the lambs in his flock of merinos a ram lamb which presented, in the great length and beautiful lustre of his wool, an entirely different appearance to the rest of the flock. As the lamb was by a pure-bred ram from a pure-bred ewe, there could not be, as was at first suggested, any doubt as to his breeding. By a happy inspiration, M. Graux conceived the idea of preserving the lamb, in order to ascertain what qualities he would display when fully developed. When this ram

was old enough, M. Graux put him to a few pure merino ewes, but he was careful to limit the number, as he did not wish to run the risk of injuring the character of his flock, which was considered to be one of the best in the department. Of the produce from these ewes, two lambs (a ram and a ewe) resembled the sire in every particular, and from this beginning he gradually formed the sub-breed which is now known as the Mauchamp merino. At first the sheep of the new variety were so extremely ill-shaped that stock-owners considered they were unfit for fattening; their heads were ugly in the extreme, the neck long and thin, with hollow loins, thin flanks, narrow quarters, and twisted feet. M. Graux was not daunted with the apparently hopeless task of affecting their improvement, and eventually his patience and skill were rewarded, and the grave defects of the new breed began slowly to disappear. In the original sheep, the wool was very long in the staple, soft and white, of brilliant lustre and high quality; but the lock was thin and pointed, and resembled the hair of the Cashmere goat more than the fleece of the ordinary merino sheep. The proprietor at last had the satisfaction of seeing the head become elegant, the neck shorter than the Rambouillet, the hollow loins straightened, and the twisted feet of the originals turned into shapely limbs, while, at the same time, a corresponding improvement was effected in the weight of the fleece, which was rendered very much denser and with well-formed lock. The efforts of M. Graux to establish this new variety attracted the attention of many scientific men and good stock-breeders in France. The Government of France, always alive to the importance of fostering and assisting

any development of the agricultural resources of the country, was not slow to encourage M. Graux's interesting experiments. He received, at different times, donations of 1,500 francs, 3,000 francs, and 14,000 francs. In all, within twenty years, he received from the Government the sum of 120,000 francs. In 1832 he received the first prizes of the *Bureau des Manufactures* and the gold medal of the Royal Society of Agriculture. In 1840 the Government purchased 3 rams and 20 ewes of the Mauchamp breed, with which stud flocks were established at Alford and Lahayeroraux.

Though merino sheep have been bred in Australia for a comparatively short time, there have occurred some remarkable divergences from the original type that can scarcely be set down to the effect of food and climate. Of these the most noted is the "Lustre" variety of merinos, which appeared in the stud flock of Mr. J. L. Currie, of Larra, Victoria. This type of sheep has been established in almost identically the same manner as the Mauchamp variety. The following is the history of the Larra "Lustre" flock:—About the year 1866, a ram lamb was born in Mr. Currie's stud flock which was greatly dissimilar to the other lambs in the flock in the brilliant lustre of his fleece. The pile was nearly straight, the serrations which usually mark ordinary merino wool being represented by a very open wave. Apart from the peculiar beauty of the wool, the "Lustre" merinos have many good qualities to recommend them. They are well-proportioned and handsome sheep, with large frames on short legs. They possess, in common with all Mr. Currie's sheep, splendid constitutions, and, after an

experience of over twenty years, they can be said to be much quieter in disposition than other merino sheep. The difference in the character of the wool is very remarkable. It shows a beautiful silvery brightness, with the pile nearly straight, the corrugations, which in high-class merino wool are so close, are in the lustre wool remarkably open, and at first sight often appear to be entirely wanting. The yolk is always clear and bright and never assumes the yellow, waxy appearance which is so common in American merinos, and it loses very little weight in scouring. Mr. J. R. Y. Goldstein, honorary secretary of the Microscopical Society of Victoria, kindly devoted much time in making a careful examination of the "Lustre" wool under the microscope and comparing it with samples from well-known stud flocks. Five samples were examined, one taken by chance from a number of Mr. Willis's ram's fleeces, one from a "Lustre" ram's fleece, one from a celebrated South Australian champion ram, bred by Mr. J. Murray; a sample from a sheep by a "Lustre" ram, and a lock from a very high class Tasmanian ewe, bred by Mr. T. Parramore. The samples presented the following appearance under the microscope :—



No. 1.—Mr. Willis's ram.

The scales on this sample were very irregular and strongly marked, presenting a distinct roughness on the outline. Their average number was 2 scales to $\frac{1}{10000}$ th

of an inch of length of pile. Under the polariscope, with selenite plate, the colours shown were very indistinct.



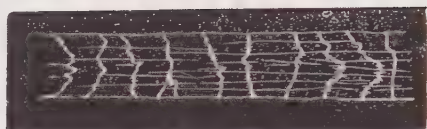
No. 2.—Young "Lustre" ram (Currie's).

This sample presented a remarkably even pile; the scales were very fine, and, at first sight, were not discernible; the fibres presented all the appearance of smooth glass rods. The scales were more regular in form than in any of the other samples; they averaged $1\frac{1}{2}$ to each $\frac{1}{1000}$ th of an inch of pile. Under the polariscope this sample exhibited very brilliant colours, sharply defined, and very abrupt in the changes.



No. 3.—South Australian ram (Mr. J. Murray's).

The scales in this sample were well defined, and showed plainly on the outline. They were irregular in form, and averaged about $2\frac{1}{2}$ to each $\frac{1}{1000}$ th of an inch of pile. Under the polariscope it showed dim, ill-defined colours.



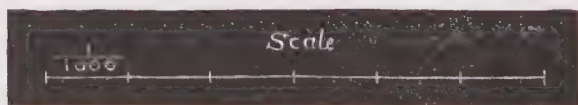
No. 4.—*Half-lustre (Mr. Currie's).*

This wool presented a very peculiar appearance, the surface of the pile being deeply marked with striations, which gave to the edges of the scales a notched or jagged appearance. They were irregular in shape, and faintly marked. Under the polariscope the colours were not so brightly marked as No. 2 and No. 5.



No. 5.—*Tasmanian ewe (Mr. T. Parramore's).*

The scales in this sample were very faintly marked, and closer than in any other sample; the average being $3\frac{1}{2}$ to each $\frac{1}{1000}$ th of an inch of pile. They were somewhat irregular, and could hardly be seen on the outline. Under the polariscope the colours were nearly as bright and clearly defined as No 2.



These illustrations give an exact representation of the appearance of the wool as seen under the microscope,

each outline being drawn from the reflected object. The only difference between the Lustre wool and the ordinary sample was that the former had a very smooth appearance, the scalings on the fibre being so faint as to escape detection until very closely examined.

The measurements of the wool examined compare very favourably with any measurements I have seen quoted by any writer. Mr. Willis's ram's wool measured an average of about $\frac{1}{1000}$ th of an inch in diameter. This was an ordinary ram, not selected for fineness. The "Lustre" wool averaged about $\frac{1}{1700}$ th of an inch in diameter. This ram was not considered nearly the finest ram in the flock. Mr. J. Murray's ram's wool averaged about $\frac{1}{1000}$ th of an inch in diameter. This ram was a celebrated champion prize-taker. The wool from Mr. T. Parramore's ewe averaged $\frac{1}{1700}$ th of an inch in diameter.

Lustre sheep, having wool of almost the same character as that bred by Mr. J. L. Currie, have appeared in several stud flocks in the Western District of Victoria. Indeed, all the wool grown in this district has a brighter appearance than that of any other part of the mainland of Australia. The wool in many parts of New South Wales has become much brighter during the last twenty years, and more like the old "Port Phillip" wool. Lustrous-woolled sheep have appeared in the celebrated stud of Mr. David Taylor, of St. Johnstone, Tasmania. Their wool has a most beautiful appearance, almost resembling silk. Mr. Taylor, like Mr. Currie, has established a small flock of lustre-woolled sheep.

The oddest sheep I ever saw was a sport, or new variety, which appeared in the stud flock of Mr. Vincent

Dowling, of L. U. E., near Mudgee, New South Wales. His wool is remarkably dense, short in staple, and perfectly straight in fibre. He is of a handsome frame, on short legs, and his horns are as smooth as if they had been rasped and sand-papered. The usual corrugations on a ram's horns were indicated by groups of black lines in the texture of the horn. His horns were very fine, and, though my hand is not a large one, I could easily span them at the base. This strange ram has much prepotent power, a couple of young rams got by him being singularly like him. As he possesses no special advantages over other sheep, and has many defects, it is not likely the breed will be preserved.

Accidental varieties among cattle have at times been observed. Of these, the "Niata" or "Nata" cattle of South America are the most interesting. This singular breed of cattle is said to have originated among the Indians south of La Plata. They are remarkable for the shape of their heads, and in appearance bear the same relation to the ordinary breeds of cattle as bulldogs and pugs do to the other breeds of dogs. The forehead is very short and broad, with the nasal end of the skull, together with the whole plane of the upper molar, curved upwards. The lower jaw projects beyond the upper, and has a corresponding upward curvature. They are perfectly true to type, and the breed has been known for a great many years. Mr. Darwin mentions the following curious circumstance relating to them:—"It is an interesting fact that an almost similar conformation characterizes, I have been informed by Dr. Falconer, the extinct and gigantic *Swatherium* of India, and is not known in any other ruminant." The celebrated long-horn bull

"Shakespeare" was an accidental variety. He was bred from pure Conley long-horn blood (and was very much in-bred), and yet was in every particular, the length and shape of the horns excepted, entirely different from the long-horn type. In carcase he had all the appearance of the Teeswater breed. "Shakespeare" possessed in a high degree those qualities in which the long-horn cattle were deficient; and, owing to his power of transmitting his good qualities to his progeny, he raised the breed of long-horned cattle to a high degree of excellence.

The appearance of the "japanned" or black-shouldered peacock in a flock of the common kind kept by Sir John Trevalyan is a peculiar instance of spontaneous variation. Their characters were so different from the ordinary peafowl that Dr. Sclater considered them a distinct species. Their prepotency was such that they increased to the extinction of the previously existing breed.* Mr. Darwin† considered this case "the most remarkable ever recorded of the abrupt appearance of a new form, which so closely resembled a true species that it has deceived one of the most experienced of living ornithologists."

Variation appears to be confined almost entirely to the domestic animals. Nothing of the sort has been known to occur among wild animals. The badger of the bone caves, one of the oldest of terrestrial mammalia surviving at the present day, has not changed in any appreciable degree. With respect to the human race, Dr. Virchow says ‡:—"When we study this fossil man of the quaternary period, who must, of course, have stood compara-

* "Proceedings of the Zoological Society, London, 1860."

† "Animals and Plants Under Domestication."

‡ "The Freedom of Science in the Modern State."

tively near to our primitive ancestors in the order of descent, or rather of ascent, we always find a man just such as men are now. . . . On the whole, we must really acknowledge that there is a complete absence of any fossil type of a lower stage in the development of man." Mr. E. B. Taylor says * :—"It must be admitted that our knowledge of manner and causes of race variation among mankind is still very imperfect. The great races, black, brown, yellow, white, had already settled into their well-known characters before written record began, so that their formation is hidden far back in the pre-historic history."

SEX.—The possibility of influencing the sex of the majority of lambs in a flock is a question that has occupied the attention of stockowners in all ages, and various theories have been advanced as to the influence of each parent on the progeny. The only theory that has stood the test of actual experiment, that I have been able to gather, is recorded in the "*Annales de l'Agriculture Française*."

The report of this experiment is to the following effect:—At a meeting of the Agricultural Society of Severac, M. Charles Giron de Buzareingues proposed to divide a flock of sheep into two equal parts, so that a greater number of males or females might be produced at the wish of the proprietor. The offer was accepted, and the experiment carried out. M. Buzareingues proceeded in the following manner:—In the flock where it was proposed to produce a majority of female lambs, very young rams were used; while in that in which it was proposed to produce a majority of male lambs,

* "*Anthropology*."

strong, vigorous rams, 4 and 5 years old, were used. The result of the experiment is shown in the following tabulated statements:—

Experiment to obtain Female Lambs.

Age of Ewes.	Sex of Lambs.	
	Males.	Females.
Two years	14	26
Three years	16	27
Four years	5	21
Total	35	74
Five years and over	18	8
Total	53	82

Three were twin lambs. One ram was 15 months old, and the other 2 years old.

Experiment to obtain Male Lambs.

Age of Ewes.	Sex of Lambs.	
	Males.	Females.
Two years	7	3
Three years	15	14
Four years	33	14
Total	55	31
Five years and over	25	24
Total	80	55

No twin lambs. The ewes were served by strong rams, 4 and 5 years old.

In the second experiment the ewes were divided into three sections. The first section included the strongest ewes, from 4 to 5 years old, which were better fed than

the others. They were served by four ram lambs about 6 months old. In the second section were the weakest ewes, under 4 or above 5 years old. They were served by two strong rams more than 3 years old. The third section consisted of ewes belonging to the shepherds, which were strong and well fed. These ewes were served by the same rams as section two.

			Males.	Females
The first section gave	..	..	15	25
The second section gave	..	..	26	14
The third section gave	..	..	10	12

In the first section were two twin births—four females. In the second and third sections there were also two twin births—three males and one female.

The following remarks on this experiment are made by M. de Quatrefages :—"The stronger sex predominates, and the product shows this superiority. The treatment of Giron de Buzareingues upon the procreation of the sexes appeared to me to be most decisive in this respect. M. Nott declares with surprise that, in point of intelligence, the mulatto approaches more to his white father than to his black mother. This was shown in Lislet Geoffrey, entirely a negro physically, though entirely a white in character, intelligence, and aptitude. The physical power of the negro overcomes that of the white in the offspring, as the intellectual power of the white overcomes that of the negro."* Though this experiment resulted, as we have seen, so clearly in favour of the theory, I think it would require to be tried on a much larger scale before it will be accepted by sheep-breeders as conclusive.

* "The Human Species."

The following experiments are instanced by Dr. Manly Miles in refutation of the theory that the right ovary and testicle were concerned in the production of males, and the left ovary and testicle in the production of females:—"Mr. J. Buckingham, of Zanesville, Ohio, gives the following report of experiments made by himself to test the truth of this theory. 'Taking a boar,' he says, 'I took out his left testicle and turned him into a lot with three sows, one of which had her left ovary out, the other the right one out, and one not speyed. The next lot had a boar with his right testicle out, and three sows fixed as the others had been. Now for the result. Every sow had from seven to nine pigs. There were not less than three nor more than five male pigs in every litter, or just as near half of each as there could be.'"*

The theory put forward by Professor Thury, of Geneva—that "the sex depends upon the degree of maturity of the egg at the time of fecundation; that which has not reached a certain degree of maturity producing the female, and if fecundated when this point of maturity has passed producing a male"—has not met with many supporters. Dr. Miles gives the following results of his experience as director of the Michigan Agricultural College Farm:—The births for ten years were in the following proportions:—Sheep, 102·5 males to 100 females; cattle, 118·4 males to 100 females. "The system pursued for the entire time was the same. The rams were turned into the ewes every forenoon during the breeding season, and the cows, as a rule, were served as soon as they were discovered to be in heat, the herd being frequently visited during the day, and driven to

* "Stock-Breeding." New York, 1879.

the barn every night and morning. With very few exceptions, the females were served during the first half of the period of heat, which, according to the theory of M. Thury, should have given a very large proportion of females." The results were—In 1864 and '65, the bull calves were 2·5 to 1 heifer; in 1866 and '67, the heifers were considerably in excess; in 1868 and '69, the heifers were nearly 2 to 1 bull; in 1870, the bulls were decidedly more numerous; and, in 1871 and '72, there were more than 2 to 1 heifer. The late Mr. J. Murray, of Mount Crawford, S.A., an old and experienced sheep-breeder, told me that when his flock was small, and he wished to breed females, he used to put very young rams to very young ewes, with this result, that the female lambs greatly predominated. He also stated that an old and somewhat feeble ram will produce more ewe than ram lambs.

In the statement of the births of racehorses, tabulated from the "Racing Calendar" by Mr. Tegetmeier for Mr. Darwin,* the following is the result:—From 1846 to 1867 (with the omission of 1849, for which no returns were published), the total births were 25,560, the proportion 99·7 colts to 100 fillies. In 1856, the colts were 107·1 to 100 fillies; and in 1867, the proportion was 92·6 colts to 100 fillies. In six successive years the colts were in excess of the fillies, and in two periods of four years each the fillies were in excess of the colts. It would appear that the proportions vary in cycles, from some cause unknown, and it is often noticed that the same season which gives a preponderance of males over females in cattle will give the reverse in sheep. The excess of

* "Descent of Man."

one sex over the other has often been found to vary as much from natural causes as in M. Buzareingues' experiment. It is within the experience of every stock-breeder that certain cows and mares persistently yield all male or all female offspring, no matter to what sire they are put; while, on the other hand, some bulls and horses are noted for the large proportion of males or females in their progeny.

The predominance of one sex in the offspring of particular animals has been ascribed to prepotency, but we have no proofs that either parent has the power of determining the sex of the offspring. Often it is noticed that a male has great prepotent power in gifting his stock with his own good qualities, and at the same time there is no undue preponderance of males among his get. So far as I have been able to learn, the determination of the sex is at present entirely beyond our comprehension. The experiments made with the view of influencing the sex of the majority of the produce are interesting, but the observations are based on too small a number of instances to be of any practical value.

EARLY MATURITY.—Breeding to induce early maturity is a comparatively modern custom which, in many instances, is carried too far. It is more common with English than with Australian stock-breeders. In England, the object of the farmer is to put his cattle and sheep on the market at as early an age as possible, and to induce this early maturity the animals are forced from their birth. The old plan of securing this end was to select the breeders from those animals that exhibited a strong tendency to take on fat. Another practice is to use very young animals as sires, which is said to have the desired

result. Such a mode of breeding will not answer in forming a permanent herd or flock. Breeding from half-grown sires must eventually tell upon the constitution of the stock. But, though there may be some doubt as to the bad results of breeding from young sires, it is otherwise when young females are bred from. Dr. Duncan remarks* that "the children of precocious marriages are not only less fertile, but the children also, which are the result of them, have an increased rate of mortality." The consequences of such a course of breeding may not be observed in the first generation, but if the practise is continued the most unfavourable results are sure to follow. The temptation to resort to any means of inducing early maturity must be very great in Europe where there is such keen competition and where rents are high. It may be questioned if the meat of the forced young stock is as wholesome food as that of animals that have reached natural maturity; but there is scarcely a doubt that the produce of young animals that have been forced from their birth are not as well fitted for breeding a permanent flock as the offspring of more mature parents. One of the strongest advocates for early maturity is Mr. E. W. Stewart. He says†:—"A study of the facts accompanying early maturity shows that the animal is as completely developed in all its parts as if it had been produced, under the old style of feeding and management, at four instead of two years. This quite disproves the objection that all things require a certain amount of time to perfect their constitution and growth—that whatever is rapidly produced must be wanting

* "Fecundity, Fertility, and Sterility."

† "Feeding Animals."

in completeness and perfection." He lays it down as an axiom that profitable feeding must be done before maturity.

However well the plan of forcing animals may answer for supplying the markets of the old world, it will be well for Australian flockmasters to avoid breed-from immature animals, male or female, on the one hand, and from animals that have been forced into precocious development by high feeding from their birth, on the other. I often find flockmasters of long experience who, when they breed a sire of exceptional excellence, use him largely, while quite a lamb, in the stud, their excuse being a fear that he might die. I have known a ram lamb used to such an extent that at 18 months old he was completely worn out. Is it surprising that the produce is not satisfactory? Indeed, it would be a great surprise to me if it were otherwise. Sheep-farmers who make this mistake forget that half-a-dozen good lambs are worth more than a hundred weakly creatures, the produce of an over-taxed, immature animal.

MOTHER MARKINGS.—Mother markings, or, as they are more scientifically termed, intra-uterine influences, are not common with sheep, but they occasionally occur. The best known instance of this is recorded in the Bible, when Jacob influenced the colour of the lambs in his uncle Laban's flock. A correspondence on this subject took place some years ago in *Land and Water*, in which the following instance was given by a writer signing himself "S. C." :—
"I remember an exhibition, in London, about 25 years ago, of a supposed hybrid between a new forest pony and a red deer. The late Sir Benjamin Brodie told me he did not believe this to be a true hybrid, but thought it

probable that the pony mare had been much in the company of red deer during gestation. Hence the indication of a divided hoof and other resemblances both in head and tail to the deer." A still more extraordinary instance was given in *The Bulletin*, Maysville, Kentucky, 15th January, 1875. Mr. M. Poyntz, of Alderney Farm, near Maysfield, turned some Alderney cows into a woodland pasture. None of the animals were branded nor were any of their parents branded for the previous 13 years. A number of Government horses were put into this pasture, where they remained several weeks. Each horse was branded on the left shoulder with the letters U. S. The next spring one of the heifers produced a calf having the letters U. S. on the shoulder, plainly marked in white hairs. In due time this U. S. heifer had a calf, which was marked in the same way as her mother, though the letters were not quite so clear. Statutory declarations as to the truth of this statement were made before Mr. C. B. Pierce, Notary Public, by Mr. Poyntz and several other persons, all of whom were well known to Mr. Pierce. Mother markings in the human family are very common.

ACCLIMATIZATION.—The climate of the southern portion of Australia seems to be as favourable to the growth of the various breeds of the domestic sheep as it is to the people of Europe. The acclimatization of the sheep in the south presented few, if any, difficulties to the early pioneers of the country. As they went further north, the difficulties became more formidable. The sheep were perfectly healthy, and the frame increased considerably, but the wool deteriorated to an alarming extent. For many years the early settlers met with nothing but disap-

pointment in their efforts to grow wool on the hot plains of Central Australia, but their energy and perseverance triumphed in the end, and what was at first looked upon as little better than a desert is now rearing admirable specimens of the merino sheep. The tropics have been invaded by the sheep-farmer, and, so far as an experience of a score of years is any proof, they have shown that sheep can be reared successfully over a large portion of tropical Australia. In many parts of the far north the rearing of sheep will be attended with great difficulty until a race of thoroughly acclimatized animals are established; but in the end the victory will remain with the sheep-farmer. No doubt it will take many years to thoroughly acclimatize the sheep to the altered conditions of life that will be met with in the vast pasture lands of the north, but, from the success that has attended the efforts already made, we may fairly anticipate that the result will be satisfactory. The difficulties in the way are apparently not nearly so great as those that have been overcome in other parts of the world, where the object to be attained was comparatively insignificant. It took twenty years of patiently conducted experiments to acclimatize the domestic European goose on the elevated plateau of Bogota, but the end was accomplished at last. The history of the human race is, in a great measure, a record of acclimatization. The Aryans are now naturalized from Greenland to India. They became acclimatized to the conditions of life in India by slow degrees, their march south being marked by eleven stations, at each of which, doubtless, long halts were made.

But though acclimatization may be safely achieved,

the effect of the altered conditions of life will certainly be felt. The effects of the constant cold in the high plateau of the Cordilleras in clothing the pig with a downy coat, and the action of the heat in the valley of the Madeline in substituting a coat of shining hair for the sheep's fleece, have been frequently quoted. M. de Quatrefages, in noticing the effect of the change in the conditions of life on the English race in the United States, remarks:—"We know that the English race was only definitely settled there at the time of the Puritan emigration, about 1620, and from the arrival of Penn in 1680. Two centuries and a half, twelve generations at the most, separate us from this epoch; and, nevertheless, the Anglo-American—the *Yankee*—no longer resembles his ancestors. . . . At the second generation, the English Creole in North America presents, in his features, an alteration which approximates him to the native races. Subsequently the skin dries and loses its rosy colour, the glandular system is reduced to a minimum, the hair darkens and becomes glossy, the neck becomes slender, and the size of the head diminishes. In the face, the temporal fossæ are pronounced, the cheek-bones become prominent, the orbital cavities become hollow, and the lower jaw massive. The bones of the extremities are elongated, while their cavity is diminished; so much so, that in France and England gloves are specially made for the United States with exceptionally long fingers. Lastly, in the woman, the pelvis in its proportions approaches to that of the man."*

Dr. Knox views these changes as the signs of an approaching extinction, while M. Reclus

* "The Human Species."

and M. L'Abbé Brasseur de Bonbourg are of opinion that, at the end of a given time, all the descendants of whites or negroes who have emigrated to America will become redskins. As to the changes that have taken place in the negro race in the United States, M. Elséé Reclus says:—"In the space of 150 years they have passed a good fourth of the distance which separates them from the whites, as far as external appearance goes." M. de Quatrefages considers it natural that the negro and the white should replace some of their features and characters by some of the features and characters of the indigenous races; and he adds:—"But they will never on that account be confused with the local races, nor with each other, any more than the white transported to Africa would ever become a true negro, or the European descendants of a negro would ever become true whites." Mr. J. C. Nott is of a similar opinion. He says*:—"The respective types which they (the negro and the white) now present antedate all human, written or monumental records, and will only disappear with the typical forms of our fauna."

What effect the altered conditions of life in Australia will have upon the sheep is a question of the greatest interest to all Australian sheep-farmers. Over the greater portion of the country, the perfect acclimatization of the domestic sheep has not yet been accomplished; but in those districts which have been longest colonized there are already visible marked differences in the character and qualities of the merino sheep. In Tasmania the carcass is small, the wool dense, and the general

* "Indigenous Races of the Earth."

appearance of the sheep is that of the German type. In Victoria the frame is larger, the staple as a rule longer, the wool not so dense. The sheep do not present that thoroughbred look so noticeable in Tasmania, and they have a more robust appearance.

In Riverina the merino sheep grows to a large size, and though the climate has a tendency to render the wool open, this has been so well counteracted by the skill of the flockmaster that the best samples of Riverina sheep of the present day could hardly be surpassed for density of wool and weight of fleece. I notice that it is becoming more soft and lustrous every year. The sheep of the Mudgee district are densely woolled, and have much more yolk and black tip than any other New South Wales sheep I have seen. In Queensland there are many types forming, the most pronounced of which is that on the Darling Downs—a fair-sized sheep, with excellent quality of wool, plenty of yolk, and good weight of fleece. In South Australia the sheep bear a strong resemblance to those of Riverina. In the warmer districts of Australia, there is little yolk in the wool, which has a white, sun-dried tip. In Victoria and Tasmania there seems to be a strong tendency, in the merinos, to produce wool of a bright, lustrous character. The effect of the climate and pastures on the fleece of the merino sheep was noticed when the first merinos were brought from the Cape. It was seen that the produce of the first sheep carried larger fleeces than their parents, that the wool was longer in staple and brighter. In Tasmania about 40 years ago, a number of Steiger sheep were imported and kept separate from others. In a few years their wool, which in the original sheep was extremely short,

had in their descendants become scarcely distinguishable from the ordinary pure merinos of the country.

CONSTITUTION.—Probably the most important point the stock-breeder has to keep in mind in selecting the breeders of his flock is constitution, and it is extremely difficult to define this important characteristic. Form is not an infallible test for strength of constitution. The improved breeds of stock are often admirable in form, but the strongest objection that can be urged against them is that they are far weaker in constitution than were the less perfectly shaped animals of our forefathers. The shorthorn is the best shaped of all our domestic cattle. This breed possesses the most valuable characteristics. They have a great tendency to fatten, reach high weights at an early age, and yet, they are, perhaps, the most delicate in constitution of all the British beef breeds of cattle. This robustness of habit, this power of rallying after hard usage, this faculty of withstanding extreme change, from drought to flood, from intense heat to piercing cold, from plenty to starvation, which goes by the name of constitution, is more often possessed by the indifferently shaped mongrels than by the highly-bred and carefully nurtured animals of almost perfect form. To be a good judge of constitution one must study the animals themselves more than books. In our stud stock the delicacy of constitution that is so plainly apparent of late years is the natural result of the pampering and coddling to which the animals are subjected. When reared in a proper manner, and on suitable country, there is no animal that is naturally more robust than the noble merino. But the constitutional hardihood of the merino is not proof against artificial rearing. Therefore, let the

stockowner who wishes to produce sound, healthy sheep carefully avoid the housed and highly-fed animals that are fit only for taking prizes at our sheep shows.

CORRELATION.—The law of correlation is briefly stated by Mr. Milne-Edwards in the following words* :—“ It has long been admitted as an axiom in animal physics that when any particular part of the body acquires a very high degree of development certain other parts stop short of their ordinary state of evolution, as if the former had obtained their unusual increment at the cost of the latter.” The effect of this law is plainly shown in merino sheep when very great length of staple of wool is sought for. It invariably happens that as the length of staple is increased the density is lessened. Sheep that have extremely long staple are generally found to be open in the wool and to have a tendency to weakness in the covering on the points. Too great a tendency to lay on fat is often accompanied by barrenness in either male or female. This law is also exhibited in those breeds of Eastern sheep which have enormously fat tails. In these sheep the fat on the bodies diminishes as the fat on the tail is increased.

PROPORTION OF EWES TO THE RAM.—One of the greatest mistakes made by sheep-breeders who purchase a high-priced ram is working him too hard. One often hears of a famous ram serving 300 and even 400 ewes in one year, and because he gets a large percentage of lambs it is accepted as a proof that the animal is not overdone. The object of breeding stud sheep should be quality, not quantity. I have seen numerous instances of the effects of overworking high-class sires, in game fowls, in

* “ *Cyclopædia of Anatomy and Physiology.* ”

merinos, in blood horses, in cattle, and in greyhounds. On this subject, Mr. E. S. Chapman, the sporting editor of *The Australasian*, a thoroughly careful student of the breeding of racehorses, sends me the following:—“There cannot be a doubt that thoroughbred sires which are restricted to a few mares beget better racehorses than those which are overdone. Sir Joseph Hawley, who was a great believer in this theory, put it into practice, and ‘Beadsman,’ who had but few mares, was quickly proclaimed the sire of a Derby winner in ‘Bluegown.’ ‘Pero Gomez,’ by ‘Beadsman,’ who won the Middle Park Plate, was only beaten by a head for the Derby, and afterwards won the St. Leger. With ‘Greensleeves,’ also by ‘Beadsman,’ he won the Middle Park Plate, and various other great races fell to Sir Joseph Hawley. Lord Falmouth was another who believed in the practice, and in Australia we have, in the Hon. Jas. White’s stud, a most notable example of the correctness of the principle, for ‘Chester,’ who annually has but few mares, has already begotten such flyers as ‘Philip Augustus,’ ‘First Chester,’ ‘Tamarisk,’ ‘Uralla,’ ‘Monte Christo,’ ‘Acme,’ ‘Carlyon,’ ‘Cranbrook,’ ‘Abercorn,’ and other brilliant animals. Not only does Mr. White restrict his sires to a few mares, but he also insists upon his mares visiting the horse only every other season.” During the last half-dozen years Mr. White has won more of our great races than all the other Australian racing men put together. When I have remonstrated with studowners for overworking a high-class sire, the excuse invariably put forward is:—“I must have a lot of rams from him; I can’t afford to restrict him to a few ewes.” I feel convinced that many a fine ram has been unable to do

justice to himself solely from this mistake of overworking him.

SELECTION.—The art of sheep-breeding might almost be summed up in one word, “selection,” for without a judicious selection of the breeders the stud will never attain a high position in the estimation of practical sheep-farmers. The skill necessary to make this selection cannot be learned in a short time. It requires, an apprenticeship of many years of patient study and observation, and even then there must be the natural qualifications present ere one can become a successful sheep-breeder.

Improvement of the breeds of domestic animals, by selecting the best and handsomest for breeders, has been practised by every race of people as far back in the history of the world as we have any authentic information. Its importance was fully understood by the stock-breeders in ancient Greece and Rome; and the judicious advice given by writers on the subject in those times might be followed with advantage by the husbandmen of the present day. Attempts at effecting improvement among their domestic animals by means of selection have frequently been noticed among semi-savage races, as I have already mentioned. The great improvement effected in all our domestic animals, and particularly in the sheep, cattle, and pigs of Great Britain, by the celebrated stock-breeders of the last generation, was owing, in a great measure, to their sound judgment in selecting the animals to breed from. With reference to the selection, Mr. Darwin remarks:—“In Saxony, the importance of the principle of selection is so fully recognized that men follow it as a trade. The sheep are placed on a

table, and studied, like a picture, by a connoisseur. This is done three times, at intervals of months, and the sheep are each time marked and classed, so that the very best may ultimately be selected for breeding." He also says:—"When a cross has been made the closest selection is far more indispensable than in ordinary cases."

Man cannot create a new race; but, as if to make up for this, his power is great to modify, improve, and preserve existing types. A French writer,* in treating of selection, says:—"If improvement is slow, it is certain. Time, care, and perseverance are, in this pursuit, the principal elements of success; and, let it not be forgotten, the very worst races may thus be regenerated. By selection, nature itself is incessantly preserved and rejuvenated, without it being necessary for that purpose to have recourse to any foreign race."

Sheep, and particularly the mutton breeds of England, are so plastic in the hands of thoroughly skilful breeders that one is almost inclined to admit that they could breed to any required form and quality. The effect of breeding in a true breed of different types is well illustrated in the two flocks of Leicester sheep owned by Mr. Buckley and Mr. Burgess. Both flocks were kept strictly pure for a period of 50 years, and yet at the end of that time they had become so different in appearance, owing to the proprietors breeding persistently to different types, that they might readily have been taken for distinct breeds. Under the management of such masters of the art of selection as Jonas Webb and Bakewell, very great alterations were made in the breeds of English sheep. As one writer remarks, it appeared as if

* M. Eugene Noel, "*Journal de la Ferme*," 1886.

they could sketch out the form of the sheep they wanted and breed up to it with certainty.

The stud flockowner should elect a standard of excellence that may be obtained under the conditions of life in the locality, and he should never for a moment neglect the means of reaching that standard. Perseverance, enthusiasm, and indomitable energy, though, perhaps, not equal to genius, make an excellent substitute for it in all the ordinary occupations of life, and in sheep-breeding those qualities are more likely to lead to success than even the possession of genius. With purity of blood, an animal suited to the locality, and skilful selection, if the highest point of success is not reached, a general standard of excellence will be attained that will well repay the owner for his trouble and outlay. Improving the breeds of our domestic animals is not a mere fanciful occupation, to be taken up for amusement and dropped whenever it is found to be inconvenient. It is a serious business, requiring the possession of great natural abilities in those who attempt the work, and, if diligently and faithfully followed, it will amply reward the individual and benefit the State. The man who can add an ounce of wool to the fleeces of all the sheep of the country does more good to the State than all the busybodies who fret and fume in the troubled arena of politics, put together. In the general flock the culling should be very carefully performed at regular intervals, and with a special object in view. In the stud flock the selection can hardly be too close; to be the least in doubt should be to be at once resolved, and any question as to the fitness of an animal for the stud flock should ensure its exclusion. The number of

ewes in the stud flock should never be allowed to influence the selection; quality alone should be the guide. Lord Rivers's mode of obtaining good greyhounds was to breed a great many and hang a great many; and the principle may be adopted by the sheep-farmer, substituting culling for killing.

All our leading stud flocks in Australia might be cited as illustrations of the value of selection in effecting improvements. The original sheep from which most of the celebrated Mudgee flocks were derived were not to be compared with their descendants of the present day for weight of fleece, beauty of wool, shape, or weight of carcass. Some of the imported German sheep, which formed the starting point of many pure Tasmanian flocks, cut very small fleeces, and the quality was not a whit better than now that the weight of fleece has been more than doubled. In Riverina and South Australia the advance made has been something wonderful, to those who recollect what the wool was like thirty years ago. The necessity that exists for our stud flocks being conducted on principles that will ensure purity of blood, high quality, with quantity of wool, good form, and sound constitution, must be apparent to everyone. With care and attention sheep readily improve, but they as readily degenerate under neglect.

Most experienced breeders of domestic animals believe the male, if of pure race, has greater prepotent power than the female. This has been shown in the breeding of hybrids. The produce of the ram and the she-goat is more like the ram, while the produce of the he-goat and the ewe is more like the goat. The cross between the horse and the ass have more asinine than equine qualities,

but the prepotency of the male parent is shown in the produce very distinctly, for the mule is more like the ass (his father), and the hinnie is more like the stallion (his father). Dr. N. G. Ellzy, in a paper read before the Biological Society of Washington, referred to the proportion of three-eighths of one species to five-eighths of the other as necessary to produce stability in hybrids. With respect to crossing between domestic breeds of animals, he said:—"In the case of mongrels between domestic breeds the formula would certainly be different, but whether we should need a greater or less proportion of paternal blood to produce the most stable mongrels, I have no facts tending to show. I fancy the proportion of three-fourths maternal to one-fourth paternal blood is very conducive to stability. I know that the proportion of one-half maternal is extremely unfavourable to stability."

PEDIGREE.—In coupling the breeders of the flock the prepotency of the sire should always be borne in mind. Hence the value of the pedigree in pure-bred sires. A long pedigree will not make a faulty sheep valuable, nor will a well-shaped and well-clad sheep make a good sire if he is badly bred.

Pedigree is a record of the judgment of the breeder carried on through a number of generations, during which good qualities have been fixed and undesirable ones eliminated. The value of a pedigree, however, will depend on the quality of the animals comprised in it. In breeding from pedigree stock, whose ancestors have been noted for their good qualities, we may fairly expect that these good qualities will be transmitted to the produce. A well-bred stud flock is therefore a great

benefit to a district. The following illustration of the value of breeding from high-class stud sires I take from the record of the Vermont Sheep-breeders' Association. In 1850 the average weight of fleece in Vermont was 3 lbs. $5\frac{1}{2}$ ozs., and of the sheep of the United States 2 lbs. $6\frac{3}{4}$ ozs. In 1860 the Vermont fleeces had increased to 4 lbs. $2\frac{1}{2}$ ozs., being an advance of 13 ozs. per fleece, and the United States sheep averaged 2 lbs. $10\frac{1}{4}$ ozs., being an advance of 4 ozs. per fleece. In 1870 the Vermont fleeces averaged 5 lbs. $5\frac{2}{3}$ ozs., an increase in the 10 years of 1 lb. 3 ozs. per fleece. The United States sheep averaged 4 lbs. $7\frac{1}{3}$ ozs., the increase for the 10 years being 1 lb. 13 ozs. per fleece. I do not think a better illustration of the value to a country of good stud flocks could be given. But it must be borne in mind that it is only by unceasing and assiduous care that any breed of animals can be maintained at an elevation above the common level. Securing a highly improved animal, often at great cost, does not, as many a stockowner has found to his cost, guarantee the superiority of all his produce. During the last ten or a dozen years we have had stud flocks spring up in Australia by the hundred—I might almost say by the thousand. Men who, till a few years ago had never owned a sheep, and who have not yet learned the A B C of the business of live stock husbandry, figure in the list at our annual ram sales as breeders of stud sheep, while sheep-farmers of very moderate capacity have also turned their attention to stud sheep-breeding. The object is not to improve the breed of sheep, but to make money rapidly, and the result is that our ram fairs are disgraced by the presence of what are called stud rams, many of which would make

very indifferent wethers. Purchasing high-priced sires and dams will not ensure a high-class progeny. If the skill to mate the breeders is not present, no matter how much money is expended in forming the stud, it will not be a success. This is often seen at the annual sales of stud sheep, where a sheep-breeder obtains a good price for a ram he bought out of a well-known stud, while the stock bred by himself realize very low figures. It is not always the show sheep that makes the best sire. Indeed, many of the finest stud rams I have seen, and I have handled many throughout Australia, would scarcely secure a place in the prize list of a leading show. It must be borne in mind that in coupling sheep it is not only the individuals themselves that have an influence on the progeny, but their parents, grand-parents, and even more remote ancestors. Hence the necessity for a knowledge of pedigree in breeding stud sheep. The most successful stud sheep-breeders, if they do not possess a record of pedigree, have bred for many years in one line, and have such a memory for the characteristics of the flock, that it seems to them almost as well as a record of pedigree.

CONCLUSION.—In dealing with the subject of sheep-breeding I have not ventured to lay down hard and fast rules for the guidance of flockmasters, or in any way to give undue prominence to my own opinions on the subject. A thorough knowledge of stock-breeding cannot be learned from any treatise, no matter how able and exhaustive it may be. My object has been to place before my readers, as clearly and fully as I can, the results of different modes of breeding, and this I have endeavoured to do honestly and without prejudice. The

principles of sheep-breeding are based on natural laws, but these laws have not yet been sufficiently demonstrated to render it possible to formulate them for practical use.

Breeding and rearing good sheep, well suited to the locality in which they are to dwell, will prove a remunerative occupation to those who undertake it, and will also benefit the country at large, while inferior, or mongrel sheep, will prove unprofitable, and will ever be an eyesore to the owner, and to everyone having the least knowledge of well-bred stock. To the agriculturist the keeping of a flock of sheep will prove one of the most remunerative operations of the farm. Already the farmers' flocks have increased greatly, and year by year there is a corresponding improvement in the quality of the sheep reared on Australian farms. But for that curse to rural industry—the dog—farmers' flocks would be much more numerous than they are. I live in hopes of seeing some common-sense legislation on this subject; for it seems to me the height of absurdity to hamper a great industry in order that a set of loafers may keep a lot of worthless curs.

I have no wish to discourage the young sheep-farmer from attempting to breed a high-class stud flock, but before undertaking the business I would ask him to carefully consider if he has the experience, the judgment, and the natural qualifications necessary for the successful carrying on of the business. If he is satisfied on these points, then I would strongly advise him to make haste slowly. He cannot expect, at a bound, to rival those skilful stud-owners who have made the business a life-long study. He must be satisfied to work his way

to the front slowly but surely, for in this, as in every other business of life, there is no royal road to success. The prizes are greater with a high-class stud than with a general flock, if the breeder attains a great success, but there are also great disappointments. On the whole, the great majority of stock-owners will find it a pleasanter occupation to breed a flock of great excellence than to attempt the foundation of a high-class stud.

Briefly summing up the subjects referred to in the foregoing, I think we may conclude:—

1. That there is no advantage to be derived from in-breeding *per se*. It is admirable to preserve valuable qualities, but in unskilful hands it is just as likely to intensify defects. Therefore, the ordinary sheep-farmer should not practise it.

2. That cross-breeding is too uncertain in its results to be employed in establishing a permanent flock, but that it may be advantageously resorted to in breeding lambs for market or raising fat stock for the butcher, it must be borne in mind that to breed good crossbreds both sires and dams should be good sheep, and the sire should certainly be a pure-bred animal.

3. That permanent improvement in a flock is not to be obtained at a bound by having recourse to extreme changes of blood, even though the animals are of the same race. Improvements gradually effected will be found of a more permanent nature than those produced by mating animals of great diversity of character.

4. That the description of sheep chosen to breed from should be such as are suited to the conditions of life in the locality, the size of the animal being regulated by the climate and the quantity and quality of the food.

5. That good stock, bred in a locality well suited to them and provided with ample food, are not sufficient to ensure success in breeding a permanent flock, unless there is also a skilful selection of the breeders and a rigid culling of the young stock. Selection is the most important of all.

AUSTRALIAN STUD FLOCKS.

“Sheep have golden feet, and wherever the print of their footsteps appear, the land is turned to gold.”

—SPANISH PROVERB.

IN presenting to my readers a record of the Australian stud flocks, I have not attempted to include every stud in these colonies, but have given the histories of what may be called the parent flocks, and those that have attained such acknowledged excellence that sires from them are used far and wide. Included in the list are a few flocks but little known outside their own districts, but which are bred in such a way that the knowledge of their existence will be of interest and advantage to sheep-breeders generally. Since the first edition of this work was published many changes have taken place in the ownership of the leading studs, and a few of the old flocks have been dispersed. During the last eight years I have inspected nearly all the flocks that are recorded in this book, and any remarks made as to the character of the sheep and quality of the wool are the result of my own observation. New Zealand is not regarded as one of the Australian colonies, but I have given a record of one flock in that colony, partly because the sheep included in the stud are of distinct type and pure lineage, and partly because sires from it have been used as an experiment with sheep from one of the most famous of the Victorian flocks, with very satisfactory results. Having lived on sheep farms from my childhood, my

sympathies have ever been with what I firmly believe is the noblest industry of Australia, though as yet only in its infancy. It has been a great pleasure to me to record the good work done by the pioneers of Australia for the land of their adoption. It is on the foundation they laid that the present race of sheep-farmers are building, and the result promises to be a solid industry, the vast importance of which we can scarcely realize at the present day. The first sheep arrived in Australia in 1788, but for many years the bulk of the sheep reared by the early colonists were the hairy sheep of the Cape of Good Hope and India. Oddly enough the second lot of pure merino sheep imported into Australia came out in the *Argo*.

The wool industry in the Australian colonies has had a truly marvellous development. In 1807 the export of wool was only 245 lbs., and in eighty years it has risen to 911,737 bales, the export in 1887-8. Last year there was an increase of about 70,000 bales on the output of the previous year. The great importance of this industry must be evident to anyone visiting the leading cities of Australia. In Sydney and Melbourne the splendid edifices erected by the wool-broking firms excite the admiration of all who see them. For many years Victoria had the largest export of wool in the Australian colonies. This was owing to its position, it being cheaper to ship Riverina wool at Melbourne than at Sydney. Much of this trade has been intercepted, owing to the New South Wales railways being extended into the western districts of the colony. Sydney now exports a larger quantity of wool than any other town in Australia.

In Sydney the old firm of Messrs. Mort and Co. had a

very large warehouse on Circular Quay, and Messrs. R. Goldsbrough and Co. had a warehouse, with a storage capacity of 50,000 bales, at Darling Harbour. These firms are now amalgamated, under the style of Goldsbrough, Mort and Co. Messrs. Harrison, Jones and Devlin have two fine stores, the floor space of which is $4\frac{1}{2}$ acres. In Melbourne the bluestone store of Messrs. Goldsbrough, Mort and Co. is considered the strongest and most substantial building in Australia. It is built of bluestone, the area of the floors being 5·61 acres. The cost of this building (including the land) was £167,000. The New Zealand Loan and Mercantile Agency Company have a large and very handsome warehouse in Collins-street, which cost £95,000 to build. It has a storage capacity of 22,000 bales. Messrs. Dalgety and Co. have erected large wool warehouses alongside the North-Eastern railway at Newmarket, within ten minutes' ride of the city. This warehouse consists of three floors, having a storage capacity of 20,000 bales. The wool sales are held at the company's offices, Bourke-street, Melbourne. The Australian Mortgage and Agency Company occupy a large warehouse in Collins-street, which has a storage capacity of about 20,000 bales. This building, which stands on an original city block of one acre, was lately sold by the company. The company have secured, on a railway siding three miles from Melbourne, a block of three acres of land, on which it is contemplated to erect an extensive warehouse. Sales of wool are held in Adelaide, in Brisbane, and in Geelong, but the great bulk of Australian wool disposed of in the colonies is sold in Sydney and Melbourne, where buyers from every part of the world assemble during the time the wool sales are held.



Wanganella“ stud ram.

The number of sheep at present in Australia is estimated at about 90,000,000, therefore all that relates to the carrying on of such a great industry must be of interest to sheep-breeders. A record of pedigree in the sire is always regarded as of the greatest importance where stock are bred with any degree of skill. Exact records of pedigree are very seldom kept in Australian stud flocks—indeed, when I advocated the keeping of such records some years ago most owners of stud flocks declared that keeping the pedigrees of sheep was impossible. In a few flocks, where the sheep are very carefully bred, there is as strict a record of pedigree kept as with our studs of blood horses and shorthorn cattle. In the following records of stud flocks the sheep-breeder will be able to gain a pretty clear idea of how the sheep are bred, though individual pedigrees are not generally available.

NEW SOUTH WALES.

THE WANGANELLA STUD MERINOS.

The Property of Messrs. Austin and Millear.

The Wanganella property was purchased when a squatting leasehold, by Messrs. Peppin and Son, in 1858. Unlike most Riverina runs at that time, it was used for grazing sheep. For several years Messrs. Peppin were engaged in fattening and dealing in sheep, but gradually a breeding flock was formed of the best sheep that came into their possession. The Messrs. Peppin were excellent

judges of stock, and they made a good selection in forming their breeding flock. The quality of the sheep was improved by the use of the finest rams they could buy in the country. In the year 1861 a stud flock was formed with a selection of 200 of the finest ewes in the flock, to which were added 100 ewes purchased from Mr. Nicholas Chadwick, of Canally, New South Wales. These ewes were by an imported Rambouillet ram. Mr. Richard Bennett, who managed the Canally flock about that time, gives me the following information as to the breeding of the flock:—"I think the original Canally stud was composed of ewes from the flocks of Messrs. N. P. Bailey, and the Messrs. Cox, of Mudgee."

With the stud flock thus formed were used some imported French and German rams. The latter were of the Negrette blood, and exhibited in their form and fleece all the characteristics of that family of merinos. The French rams were from the Rambouillet flock. One of them, named "The Emperor," was famous for his large, well-shaped frame, and heavy fleece. For several years in succession he cut a fleece weighing 25 lbs. of greasy wool, which, scoured on the station, yielded 12 lbs. of clean wool. I have been informed by Mr. F. Peppin that the wool was faithfully scoured in hot water, and was almost, if not quite, as white as the best samples from the metropolitan scouring establishments. "The Emperor" had great prepotent power, and stamped his progeny with his own good qualities. He was used with the finest ewes in the stud as long as he lived. Even at the present day it is an easy matter for anyone who knew the old ram to point out among the stud sheep many rams that bear a great

resemblance to him. Having the double cross of the Rambouillet, and being inbred to "Emperor," the type of the Imperial French breed is very pronounced in this stud. The Negrette type crops up at times, and during a visit I paid to the stud in 1883 I noticed two or three rams showing the German character very strongly. The Negrette blood was very useful in giving density to the wool and good covering, qualities for which these sheep are famous. About 1866, a couple of imported American rams of the blood of "Old Grimes" were used in the stud. Their stock were noted for their heavy fleeces of strong combing wool. Rams having something of the American type are still occasionally to be seen in the stud, but the characteristics of the Wanganella sheep are essentially those of the Rambouillet, modified by the German and American bloods, and influenced by climate, pasture, and selection. After the imported rams were considered past work, the sires for the stud were drawn from the rams bred in the flock. An experiment was made with some Victorian-bred rams with the view of bringing up the quality of the wool to a higher standard, but the produce did not give satisfaction and they were eliminated from the stud. In the year 1874, a selection of the finest ewes in the stud flock was made, and with them was formed an extra or (as it was called on the estate) double stud flock. The greatest care was made in selecting the heaviest and most perfect fleeces, and Mr. Jonathan Shaw, who had already been engaged in classing the Wanganella sheep for many years, succeeded, by the time that Messrs. Peppin and Sons sold the estate, in bringing this flock to a very high state of excellence, both for quality and weight of wool, securing at

the same time a high reputation for size of carcass and symmetry.

By this time the proprietors had formed many small paddocks on the estate, by means of which they were able to regulate the breeding of the stud flocks with much greater accuracy than when the sheep were shepherded. Special ear-marks were used in order to identify the get of each ram, of which a record was kept and which proved a most valuable stud book.

The Wanganella estate was purchased by Messrs. Austin and Millear in 1878, and with it the whole of the general flock and the double stud flock was delivered, the single stud being divided between Wanganella and Boonoke, both of which properties had belonged to Messrs. Peppin and Sons. As some doubts have, at times, been expressed as to the disposal of the double stud, I made careful inquiry into the matter. Mr. F. Peppin told me that all the sheep in the double stud were delivered to Messrs. Austin and Millear, and I have seen conclusive documentary proof that this was the case. At the time it was sold to the present proprietors the double stud consisted of 495 breeding ewes, 147 ram lambs, and 8 sires, in all 837 head. Only two double and twenty single stud ewes have ever been sold by Messrs. Austin and Millear; the balance are either dead or are now on the estate, and number—the former 1,275 and the latter 8,738, of all ages. In the management of the stud, Messrs. Austin and Millear followed the system of breeding adopted with such good results by the previous owners. The greatest care is taken in culling the sheep, and any animal not reaching the required standard of quality is at once cast out of the stud. By the time

Messrs. Austin and Millear purchased the estate it had been converted into a freehold, and they, by increasing the number of small paddocks already formed, were enabled to regulate the breeding of the stud sheep with perfect accuracy. At the commencement of the general shearing the small percentage of the double studs selected by Mr. Shaw (say, some 200) are brought into the shed, where they are carefully examined by the proprietors, who note their opinions of each animal. The sheep are then shorn, and each fleece is accurately weighed and put aside. The next day these are opened out, and the condition and weight of fleece, along with any peculiarity that may be apparent, is considered, and upon this the opinion already noted is either confirmed or otherwise. The next year the same sheep are put through the same critical examination and the results compared with those of the previous year. Any sheep exhibiting a falling off is then cast out of the double stud. The fleeces of all rams kept in the stud after 4-tooth are carefully examined every year, and on any deficiency becoming apparent they are rejected from the stud.

Every year a number of gentlemen are invited to be present at the shearing of the double stud flock, and the fleeces are weighed in their presence. There cannot, therefore, be a doubt of the faithfulness of the shearing of the stud sheep, or of the weights of the fleeces they yield. In the season 1883, I was one of the guests who attended the shearing at Wanganella, and I took notes of the weights of wool cut by the rams in the double stud flock. The season was a bad one, and even late in August there was scarcely any grass on the estate. The following is a *résumé* of the particulars of the shearing:—Of

50 4-tooth rams, 25 cut fleeces weighing 18 lbs. and over, 16 fleeces weighed 19 lbs. and over; the heaviest fleece weighed $22\frac{1}{4}$ lbs. The wool was clean, free from black tip, and lighter in grease than is usual with rams' fleeces. The 2-tooth rams came out remarkably well—of the 25 rams shorn whilst I was in the shed the lightest fleece was 15 lbs., and the heaviest 18 lbs.—the average was a little over 16 lbs. The ewes cut correspondingly heavy fleeces—6 show 4-tooth ewes averaged 13 lbs. 7 oz. of greasy wool, and 8 show 2-tooth ewes averaged 13 lbs. 2 ozs. One aged ewe yielded a fleece that weighed 16 lbs. In 1884, Mr. Samuel McCaughey paid 4,000 guineas for 10 2-tooth rams, and over £33,000 was received for rams of that dropping, exclusive of the reserve made for use in the Wanganella flocks. In 1885, the shearing of the double stud rams and weighing of the fleeces was carried out in the presence of several noted sheep-breeders in the district. The following were the weights of fleeces clipped:—50 2-tooth rams, average 17 lbs. 4 ozs., greatest weight 19 lbs. 9 ozs.; 25 4-tooth rams, average 19 lbs. 9 ozs., greatest weight 21 lbs. 1 oz.; 27 mixed aged rams, average 19 lbs. 6 ozs., greatest weight 22 lbs. 5 ozs. "Premier II.," 5 years old, cut 21 lbs. 9 ozs.; "Invincible II.," 5 years old, cut 21 lbs. 13 ozs.

One of the breeders present obtained the services of one of the above rams for the season, for which he paid 200 guineas. On the following days 1,157 breeding ewes, from 1 to 15 years old, averaged 11 lbs. $2\frac{1}{2}$ ozs., being the growth of 12 months to a day. Two Deniliquin prize ewes of 1886 gave fleeces weighing 16 lbs. and $16\frac{3}{4}$ lbs., the former being the champion grass-fed ewe.

The finest ram ever bred in the stud is "Premier II."

His 2-tooth fleece weighed 16 lbs. 11 ozs.; his next fleece weighed 19 lbs. 8 ozs.; in 1883 he clipped 20 lbs. 9 ozs.; in 1884, 20 lbs. 1 oz.; and in 1885 his fleece weighed 21 lbs.

All these fleeces were shorn in the presence of visitors, and the last one (almost as bright as washed wool), was exhibited at the annual ram sale in Melbourne. "Premier II." carried off the champion prize at Deniliquin in 1882 and 1883, and certainly deserved the prize in 1884, but the judges gave it to another Wanganella ram. In 1885 he was again awarded the champion prize as grass-fed ram. He is not as large as the general run of the Wanganella rams, but the way the wool is packed on him is the admiration of every sheep-breeder who sees him. He is splendidly clad on the points and underneath.

"Warrior" was a first prize ram in 1877, whose fleece was in the prize case of 12 rams' fleeces at the Melbourne International Exhibition 1881-2. He has been used regularly in the double studs ever since, and now in his eleventh year is in the same service. His progeny has realized, perhaps, more than that of any other ram in the stud. "Invincible II." has aided well in maintaining the reputation of the stud, he having as a yearling, in 1881, taken first prize at Deniliquin, cutting $17\frac{1}{4}$ lbs. of wool, with a few days less than 12 months.' His fleece increased in weight yearly till in 1885, when, in his sixth year, he gave 21 lbs. 10 ozs. Each year he was shorn and his fleece weighed in the presence of visitors. Seven 1 and 2-year-old sons of his were at Deniliquin, in 1886, either winners of first prizes or in pens of winners, two of these taking first prize for rams 4-tooth, and shorn by the Society as 2-tooth, and one, a 2-tooth, being placed first for the

third challenge prize, being the first of these prizes for which Messrs. Austin and Millear competed. Another sire worthy of special notice is "Conqueror," winner of a first prize every year of his life, beginning as a 2-tooth in 1879, and finishing as 4-year-old in 1882 by winning the grand champion challenge prize, of 150 sovereigns, at Ballarat, Victoria. Messrs. Austin and Millear think that this ram lived too fast, and that the two years' stall-feeding in Victoria was too much for him. He is the only sheep the property of Messrs. Austin and Millear that has in any way been artificially fed or cared for.

Whenever Wanganella fleeces have been placed in competition for prizes they have been very successful. In 1878, at the Sydney International Exhibition, Messrs. Peppin and Sons were placed first for the most valuable 6 merino ewes' fleeces, unskirted, Mr. E. W. Pitt, S.A., being second. For the most valuable 6 merino ewes' fleeces, unskirted, Messrs. Peppin and Sons were placed first. Mr. E. W. Pitt was second. For wool grown in intermediate and saltbush districts Messrs. Peppin and Sons got first prize.

At the Melbourne International Exhibition, 1881-2, Messrs. Austin and Millear were placed second in each case with their three exhibits for 20 fleeces from 2-tooth ewes, 20 fleeces from ewes of any age, and 12 from rams of any age, open to all comers, Mr. Pitt being first in each case. The Wanganella sheep have, during the last 10 years, been very successful in taking prizes at the Deniliquin Show, and have been awarded 61 first prizes, 13 champions (including three grand champion prizes won by grass-fed against housed and fed sheep), and three special prizes. The only prize ever offered for sheep



„Wanquellid“ stud ewe by Warrior.

shorn the previous year by the society, brought forward next year for competition, was awarded to Messrs. Austin and Millear. The society's prize for the best 5 2-tooth rams has been awarded to Wanganella studs for 10 years in succession. They also won the only prize offered for 4 ewes of any age. The following prizes have been taken by wool from the Wanganella stud sheep at the Centennial Exhibitions :—Adelaide : first for grown rams' fleeces, first for 2-tooth rams' fleeces, and first for 2-tooth ewes' fleeces. Sydney : first for grown rams' fleeces, first for 2-tooth rams' fleeces, first for 2-tooth ewes' fleeces, and gold champion medal. Melbourne, 1888 : first for 12 grown rams' fleeces, and first for 12 2-tooth rams' fleeces. Melbourne, 1889 : first for 12 grown rams' fleeces (the average weight was a little over 20 lbs.) At this show the grand champion prize for the best collective exhibit of greasy wool was awarded to Messrs. Austin and Millear. All the wool shown at these exhibitions was shorn from purely grass-fed sheep. The Wanganella sheep have been very successful in carrying off the prizes in the champion challenge contests at Deniliquin, in which the sheeps' fleeces are scoured and the highest value for two out of three seasons gains the prize. They have won the first, the third, the fourth, and the fifth of these prizes. The portraits given are a "Warrior" ewe, which is an excellent representation of the stud sheep ; a stud ram, a prize-taker ; and a group of stud ewes, also prize-takers. The Wanganella sheep have been very successful at the leading Australian shows in the hands of those who have purchased them, and their stock from Victorian ewes have attained very high honours at the leading Victorian shows.

THE COONONG STUD MERINOS.

The Property of Mr. Samuel M'Caughey.

About the year 1860 the Coonong property was first stocked with sheep, it having previously been used as a cattle run. The first sheep were purchased from Mr. James Cochrane, of Widgiewa. They were very old ewes, of large frame and excellent quality of wool. It was understood that they came originally from Mount Hope, and that they had a large infusion of Camden blood. To these ewes were put rams bred by the late Mr. N. P. Bayly, of Havilah, and the late Mr. R. Q. Kermode, of Mona Vale. The produce were so promising that the best of the young ewes were selected to form a stud flock. Rawden and Bayly rams were used for a time, and, in 1866, a couple of Ercildoune rams were used. Their stock were remarkable for the lustre and softness of their wool, but it was considered too open, and the Ercildoune rams were replaced by a couple of rams bred by Mr. James Gibson, of Belle Vue. Shortly after, Mr. M'Caughey returned to the Bayly strain. In 1873 he purchased 200 Havilah rams, and next year he secured 1,000 rams from the same flock. In 1875 he purchased 2,000 rams, the whole of the year's draft from the Havilah stud. The finest rams were selected from these purchases for stud purposes. About this time, 20 ewes from Ercildoune were added to the stud, and three Ercildoune rams were purchased, which were used in the stud. In 1879 a very fine ram was purchased from Mr. George Rouse, of Biraganbil. He produced excellent stock, and was used as long as he lived. In 1881 an

addition was made to the stud of 300 very old Havilah ewes of the old Bayly type, and 160 ewes from the L. U. E. stud.

Mr. M'Caughey, having divided his property into many enclosures, was by this time enabled to make experiments in breeding, with the view of ascertaining which rams nicked best with his ewes. He purchased high-class rams from the studs of Messrs. W. Cumming and Son, Mt. Fyans; Messrs. Thos. Dowling and Son, Jellallabad; Mr. C. Gray, Nareeb Nareeb; and Messrs. G. Clark and Co., East Talgai. The most successful of these experiments were with the Nareeb and East Talgai rams. In 1882, a ram bred by Messrs. Austin and Milleear, Wanganella, was used in the stud, and produced such remarkably fine stock that Mr. M'Caughey gave the high price of 4,000 guineas for the 10 2-tooth Wanganella rams exhibited that year at the Deniliquin Show. In 1885 some young rams, bred by Mr. S. Falkiner, Boonoke, were purchased, one of which was used in the stud. Early in the spring of 1886 I was at Coonong, when the sheep were selected for exhibition at Deniliquin and other shows. They were a most attractive lot of sheep, of good size, and well covered with large fleeces of excellent wool. A 4-tooth ewe, with a large lamb at foot, was sent to the Deniliquin Show, where she gained the champion prize in the grass-fed classes, and was a close second for the grand championship. The nick between the Wanganella rams and the ewes by Mudgee sires was highly successful. Mr. M'Caughey was one of those who tried the experiment of using American rams with Australian merino ewes. In 1883 he purchased 10 Californian rams in Sydney, at prices ranging from £52 10s.

to £450. Three of these sheep were French merinos, the others were of the Vermont type. A few American ewes were bought at the same time. I saw the progeny of American rams and Coonong ewes when 2-tooth, and found them large-framed and heavily-woolled, but the quality of their wool was not equal to that of the Coonong rams by Mudgee sires. Since then Mr. M'Caughey has increased his stud of American merinos, and intends giving them a full trial with the best of his sheep, and he also intends keeping a stud of the pure American stock. The large number of paddocks on the Coonong estate renders the experiment easy of accomplishment, and if the result is not eventually satisfactory, the whole of the cross can be eliminated without doing any damage to the stud.

Mr. M'Caughey's object in breeding stud sheep is to provide a supply of high-class rams for his large pastoral properties in Riverina and Central Australia. His efforts to increase the weight of wool on his sheep have met with a large share of success. In 17 years the clip of the Coonong sheep was raised from 2 lbs. 10 ozs. to 3 lbs. 0 $\frac{1}{4}$ oz. of hot water and spout washed wool. For some years past the Coonong wool has not been washed, owing to a scarcity of water, but from the weight of greasy wool Mr. M'Caughey believes the average would now be close up to, if not fully, 4 lbs. of hot water and spout washed wool. The quality of the Coonong stud sheep's wool is excellent, being of a finer description than that of the majority of the Riverina studs. It is long in staple, and the sheep are very well covered on the back, points, and underneath. Mr. M'Caughey is an enthusiastic breeder of merino sheep, and he spares no expense in

securing such rams as he believes will improve his sheep.

From the records of the stud I learned that the sheep cut extremely heavy fleeces. In 1884, 33 2-tooth rams averaged 14 lbs., the highest weight being 15 lbs. 12 ozs., and the lowest 13 lbs. 39 2-tooth ewes averaged 12 lbs. 0 $\frac{1}{4}$ ozs., the highest weight being 15 lbs. 12 ozs., lowest weight, 11 lbs. 7 show 2-tooth rams averaged 15 lbs. 4 $\frac{1}{2}$ ozs. 29 4-tooth rams averaged 15 lbs. 4 $\frac{1}{2}$ ozs. "Old Rouse," 7 years, cut a fleece weighing 16 lbs. 11 ozs. of good clean wool. 235 2-tooth rams averaged 9 lbs. 10 $\frac{3}{4}$ ozs. In 1885, 16 imported American rams cut fleeces ranging from 21 lbs. 10 ozs. to 43 lbs. 8 ozs., of 12 months' growth at Coonong. 6 of these fleeces were scoured. The highest weight was 11 lbs. 4 ozs. from a fleece that weighed 33 lbs. 12 ozs. in the grease. The heaviest fleece was not scoured. 109 stud rams, 80 of which were bred in the Coonong stud, 10 were half-Americans, and the others from Wanganella, Mudgee, Boonoke, and Quiamong studs, gave an average of 17 $\frac{1}{2}$ lbs. of greasy wool. The highest weight, cut by a Coonong ram, was 24 lbs. 4 ozs., and the lowest 16 lbs. One of these rams, a half-American, took champion prize at Deniliquin that year. His fleece weighed 20 lbs., and scoured to 10 lbs. 4 ozs. Another ram bred in the Coonong stud cut 17 lbs. 8 ozs. of greasy wool, which scoured to 12 lbs. The fleece that weighed 24 lbs. 4 ozs. was not scoured. During the last four years the Coonong sheep have taken many prizes at the leading Riverina shows, and their highest successes have been obtained at Deniliquin in competition with the best sheep in Riverina.

Last year Mr. M'Caughey visited Vermont and purchased about 400 sheep from the best of the registered flocks. A considerable number of these sheep were from the studs of Mr. H. C. Burwell, Bridport; Mr. E. N. Bissell, East Shoreham; Mr. Stickney and Mr. C. P. Crane, Bridport. They were selected by Mr. S. M'Caughey, with the assistance of the Hon. W. G. Markham. The finest sheep that could be found were purchased, irrespective of price, and it was said that Mr. M'Caughey took away all the best sheep in the Vermont flocks. These sheep have been taken to Coonong, where they will form a separate flock.

THE BOOMANOOMANA STUD MERINOS.

The Property of Messrs. W. Hay and Sons.

This stud was formed in 1869, with 70 ewes purchased from Mr. James Stewart, Symon's Plains, and Mr. James Gibson, Belle Vue, Tasmania. The first year a Belle Vue ram was used, and he was followed by a ram bred by Mr. John Cumming, Terinallum, Victoria. In 1871, 25 ewes were purchased from Mr. John Cumming, and in 1876 about 250 ewes were purchased from Mr. J. L. Currie, Larra, Victoria. A ram bred by Mr. P. Smith, Tasmania, was used for a couple of years, and then rams bred by Messrs. W. Gibson and Son, Seone, were used with good results. In 1882, a separate stud was formed, with 30 ewes purchased from Mr. T. S. Falkiner, Boonoke, New South Wales; and 10 Boonoke ewes were added to this stud the next year. Since 1883, none but sires of American lineage have been used in either of the fore-

going studs. In 1883 Mr. W. Hay and his son, Mr. A. Hay, went to America and inspected the Vermont and New York merino stud flocks. In this they received great assistance from the Hon. W. G. Markham. In conjunction with some other Riverina flockmasters, they purchased selections from the flocks of Mr. G. Hammond, Mr. F. D. Barton, and Messrs. J. T. and V. Rich, Vermont; and Mr. S. B. Luck, New York. The sheep arrived in Sydney on 7th July, 1883; but, owing to mismanagement, three of the finest rams and one ewe were killed in dipping. The American sheep were disposed of by lot. Messrs. Hay and Sons got 5 Luck ewes, 2 Barton ewes, and 1 Rich ewe. There being no registration of stud sheep in Victoria, the pure American sheep in this flock are registered in the New York State Register. The stud ram in use at present is one bred in the flock which cut a fleece this season (1889) weighing 34 lbs. in the grease. He is very wrinkley, and is a grandson of "No. 119," bred by Mr. L. P. Clarke, Addison County, Vermont. "No. 119" is a celebrated sire in America. His sire was "General" (bred by Mr. L. P. Clarke), whose portrait is given in the Vermont Register, page 131.

THE BOOMANOOMANA VERMONT STUD.

The Property of the Hon. W. G. Markham, Elm-place, New York State, U.S.A., and Mr. Alfred Hay, Boomanoomana, N.S.W.

In the year 1883 the Hon. W. G. Markham selected 9 ewes for density of wool, heavy fleeces, and strong constitutions. They consisted of 2 ewes purchased from Messrs. Bronson and Mariner, 5 ewes purchased from

Messrs. T. and L. E. Moore, Shoreham, Belmont, and 1 ewe purchased from Mr. J. T. Stickney, Shoreham. These ewes were all of Paular blood. The other ewe was of Atwood blood, and was purchased from Mr. W. K. Delong, West Cornwall, Vermont. A half-interest in these ewes was purchased by Mr. A. Hay before they were brought to Australia. The sires used have been "Superb" (820, New York Register), now owned by Mr. S. M'Caughey, Coonong; "Australia" (871, New York Register), a Barton ram; and a ram (822, New York Register) imported in conjunction with the late Mr. James Winter, Dhurringile, Victoria. Last year (1888) one of these ewes cut a fleece weighing 31 lbs., and two ewes cut 28 lbs. of wool each. This year the highest fleece is 28 lbs. The Vermont ewes have been very prolific at Boomanoomana. Mr. A. Hay informs me that one of the Moore ewes (391) has had twins three times in four years, and "392" has had twins twice in the same period. The sheep in this flock are registered in the New York State Register. The pedigree of every animal in the stud is accurately recorded. Both flocks are kept on the Boomanoomana estate, situated on the northern bank of the River Murray. The post town is Mulwala, New South Wales.

THE SPRINGFIELD MERINOS.

Bred by Mr. A. Lucian Faithful.

More than half a century ago Mr. W. P. Faithful, then just come of age, settled down on the country now known as the Springfield estate. Though his youth had

been spent in a merchant's office, Mr. Faithful readily took to the life of a stockbreeder, and soon developed a keen judgment in the good points of horses, cattle, and sheep. He was one of the first in his part of the country to recognize the importance of breeding from none but pure-bred and high-class sires. Mr. Faithful's first purchase of sheep consisted of 960 ewes, of all ages, from the flock of a Mr. Hassell, whose sheep were at that time held in high repute. That they were of a very profitable description may be gathered from the fact that over forty years ago the wool from the Springfield flock realized eight shillings per head. Mr. Faithful bought rams from the Mudgee flocks, and also obtained a number of rams from the famous Camden stud. He made it a rule to purchase 10 high-class rams every year. They were mostly drawn from the flocks of Mr. N. P. Bayly, of Havilah; Mr. E. K. Cox, of Rawden; Mr. W. E. Riley, of Raby; Mr. George Cox, Mr. Edward Cox, Mr. N. P. Badgery, and Mr. James Riley. Some German rams, imported by a neighbour, were also used in the flock. In 1871, Mr. A. Lucian Faithful, a son of the proprietor, undertook the management of the flock, a task for which he had qualified himself by several years' work among the celebrated Mudgee flocks. He selected the finest ewes in the flock, and with them formed two studs. The first consisted of 63 ewes, having the highest quality of wool, the other of 82 ewes, chosen for a more robust type of wool. The two flocks have since been bred in an almost identical manner. The sires in each have been drawn from the same flocks, the different types have been maintained by selection alone. The first ram used in the fine-wool flock was

"No. 43," purchased from Mr. E. R. Cox, of Rawden. He was by an imported Silesian sheep, or one of his sons. He proved an excellent sire, and some very fine sheep were got by him. "No. 43" was succeeded by a ram from Mr. Riley's L. U. E. stud, and following this was "No. 01," bred by Mr. E. S. Antil. The sire of this sheep was from the St. Johnstone flock. Then followed "Viscount," bred by Mr. James Gibson, of Belle Vue. "Viscount" was so successful in the show-yard and at the stud that Mr. Faithful was induced to purchase other Tasmanian rams. Among them was "Noble," bred by Messrs. W. Gibson and Son, of Scone. He carried off first prize in his class, in Sydney, 1878. In 1879, the "Duke of Richmond," bred by Mr. J. D. Toosey, of Cressy, was added to the stud. Since then the rams purchased have been all of Scone blood. One of these rams was "Grand Prince," purchased in 1881, by "Prince 2nd," by "Prince," by "Sir James," by "Sir Thomas." This ram won the champion prize at the Goulburn Annual Show, after serving 213 ewes. Next year "Grand Prince" was sold at auction for 490 guineas to Mr. R. C. Cooper, of Willeroo. After the sale Mr. Faithful gave £100 for the privilege of sending a few ewes to "Grand Prince" the next season. Another Scone ram was "Royal Duke 3rd," price 325 guineas, and "Prince Victor," 235 guineas. "Royal Duke 3rd" was by "Royal Duke" from "No. 14," by "Scone" from a heavily-fleeced ewe, by "Young Louis," by "Old Louis," by an imported Negrette ram, bred by H. von Nathusius, of Hundesburg. "Scone" was by "Prince," a grandson of "Sir Thomas," from a ewe by the imported "Little German," bred by Gadegast. "Prince Victor" was by the champion ram "Prince 2nd," a grandson of "Sir Thomas." His dam was

from a ewe by "Little German." The sheep from this stud have been greatly admired by the breeders of merino sheep throughout Australia. They have been very successful in the show-yards of the parent colony, and realize excellent prices at the annual sales.

The second, or robust-woolled flock, has been bred from sires drawn from the same studs as those used in the fine-wool flock, save that it has had a stronger dash of the Silesian blood. A ram named "Trojan," bred by Mr. David Taylor, was used in this stud. Running on grass, and heavily worked, his fleeces for three successive years weighed $16\frac{1}{8}$ lbs., $16\frac{1}{2}$ lbs., and $17\frac{1}{2}$ lbs. respectively. His sons have been much used in this stud.

In addition to the two studs described, Mr. Faithful has a small stud composed entirely of sheep of Tasmanian breeding. In 1877 he purchased 20 ewes from Mr. D. Taylor, to which were added 2 rams from the Scone flock. Several other sheep have been bred in this flock. Two hogget rams, named "Romulus" and "Remus," by "Grand Prince," were as fine young sheep as I have seen. They took first and second prizes at the Wagga Show, in 1886, and their fleeces weighed 16 lbs. and 17 lbs. of bright, clean wool. A couple of very fine sheep bred in this flock were "Grand Prince 2nd" and "Silver King."

The sheep in the second, or robust-woolled flock, have a strongly marked individuality. They have less wool on the faces than the other studs, and are generally clean-legged below the knee; but they are admirably covered on the body, and bear very heavy fleeces of clean, bright wool, long in staple and of a most useful character. All the Springfield sheep cut heavy fleeces. In 1883, the grown sheep, numbering 8,971, of which

3,400 were breeding ewes, cut an average of 8 lbs. 10 ozs. of greasy wool. The next year, which was a very unfavourable one, owing to the drought, the average clip was 8 lbs. $\frac{3}{4}$ ozs. per head of unwashed wool. The climate is very cold in winter, and the sheep bred on the estate are of very robust constitution. Springfield is situated about four miles from the town of Goulburn, on the Sydney and Melbourne railway.

THE YAMMA STUD FLOCK.

The Property of Mr. C. M. Lloyd.

This flock is formed entirely of the descendants of 959 ewes purchased by Mr. Lloyd from the late Mr. N. P. Bayly, of Havilah, Mudgee. They were of the old type of the Havilah sheep, and the ewes were very old when brought to Yamma in 1880. They were in lamb to some of Mr. Bayly's choice rams, and the produce at weaning was 666 lambs. Not having any Havilah rams, Mr. Lloyd put the old ewes to 10 selected stud rams bred by Mr. Phillip Russell, of Carngham, Victoria. The whole of the dropping consisted of 722 lambs. In 1881 Mr. Lloyd used the young rams of the first dropping, and has used the rams bred in his own flock ever since. Mr. Lloyd has sold a considerable number of rams from his Havilah flock, but has never parted with a ewe. The flock has been carefully culled since it arrived at Yamma, and now numbers 1,560. A special stud of 100 of the finest of the ewes has been formed, which have been put to a stud ram bought from Mr. H. White, the present owner of

Havilah. The number of the stud sheep being small, Mr. Lloyd has not kept the wool separate, but since the stud has been established the weight of wool yielded by the Yamma sheep has considerably increased. The Yamma estate is situated in the Riverina Province, N.S.W. The soil is good, and the pasture excellent for sheep, but the country has suffered greatly from droughts for some years past.

THE BIRAGANBIL STUD MERINOS.

The Property of Mr. George Rouse.

This stud was formed by the present proprietor in 1864 with a small number of sheep purchased from the late Mr. N. P. Bayly, of Havilah. The original sheep consisted of a ram, for which the then high price of £100 was paid, six ewes from Mr. Bayly's special stud at £20 each, then considered an extravagant price, and 160 ewes from the general stud at £5 per head. Soon after, Mr. Rouse purchased from the late Mr. E. K. Cox, of Rawden, two rams at £50 per head, and 1,000 maiden ewes from the Rawden stud. The finest of the maiden ewes were selected and joined to the Havilah ewes to form the stud flock. Since then this flock has been bred from within itself, the only outside blood introduced being an imported Steiger ram, which produced some excellent stock. At the dispersal of the celebrated Brombee flock, Mr. Rouse purchased some of the best rams and ewes which have been since kept as a separate stud. The Brombee flock is greatly inbred, no rams from any other flock being used in it since its formation. It

is described as the No. 1 stud, and the rams from it are used in the No. 2 stud (descended from the Havilah and Rawden sheep). The No. 1 stud sheep have good-sized frames and large fleeces of excellent combing wool. The yolk is not so bright as in Victoria, and I fancy the wool would lose more than that of Victorian studs in scouring. The stud sheep cut excellent fleeces. Mr. R. Rouse, a son of the proprietor, who has for several years managed the stud, furnished me with the following particulars of the weight of greasy wool cut by the finest sheep in No. 1 studs:—"In 1882 44 rams cut an average of 15 lbs. 4½ ozs. The heaviest fleeces were yielded by 'Prince Imperial,' 6 years, and 'Prince Albert,' 3 years, who each cut 20 lbs. 'Sir Walter Scott,' 6 years, a favourite sire, cut 18 lbs., and 'Bobbie Burns,' 7 years, cut the same weight. 'Crown Prince,' a hogget, cut 20 lbs. Twenty-eight ewes yielded an average of 12 lbs. 12 ozs., the highest fleece being 15 lbs. In 1883 20 stud rams averaged 15 lbs. 5 ozs. 'Prince Imperial' cut 18 lbs. 5 ozs.; 'Sir Walter Scott,' 15 lbs. 8 ozs.; 'Bobbie Burns,' 8 years, cut 19 lbs. 8 ozs., and 'Crown Prince,' 18 lbs. 4 ozs.; 32 stud ewes averaged 12 lbs. 13 ozs. In 1884 33 rams averaged 15 lbs 7 ozs., and 566 ram hoggets averaged 11 lbs. 2 ozs." I saw this stud flock in 1885. The sheep were of good-sized frame with wool of excellent quality, long in staple, dense, and well put on. They were a most profitable type of sheep. "Sir Walter Scott" carried off champion prize at Mudgee, in 1880 and 1881. In 1882 he was beaten by "Prince Albert," but the old ram was again victorious in 1883, when he gained his third champion prize. Both these rams were by a ram named "Field Marshal." One of the finest of the stud ewes that I examined cut only 9 lbs.

as a hogget, almost the highest fleece of the year in the stud hoggets. The next year her fleece weighed 13 lbs. 4 ozs., and in 1884 she cut 17 lbs. 8 ozs. She was a handsomely formed sheep, of large size, with a fleece of great density, good quality, and remarkably even. The Biraganbil sheep have taken many leading prizes since they were first exhibited in 1877. At Mudgee, from 1877 to 1884, they carried off twelve champion and thirty-five first prizes. At Dubbo, in four years, they were awarded four champion prizes (divided another) and sixteen first prizes. They gained champion prizes for rams and ewes at Yass, in 1879; and the same year, at Albury, a Biraganbil ram, shown by Mr. J. F. Jenkins, took champion prize. For size of frame, quality of wool, and weight of fleece, the Biraganbil sheep are excellent representatives of the famed Mudgee merinos.

THE BRINDLEY PARK STUD MERINOS.

The Property of Mr. J. B. Bettington.

This is the oldest and best bred stud of merino sheep in North-Eastern Australia. The majority of the stud flocks in Northern New South Wales and Southern Queensland have been greatly indebted to it for much of their excellence. The stud was founded by the late Mr. J. B. Bettington (father of the present proprietor), in the year 1829, with 200 pure merino sheep imported from a place near Ochatz, in Saxony, but from what flocks they were obtained there is no record to show. Before coming to Australia, Mr. Bettington spent some time in

Germany, and there formed the acquaintance of several gentlemen thoroughly acquainted with the breeding and qualities of the merino sheep. He was therefore able to get the best information as to what sheep he should select when he wished to import the finest merinos into Australia. The sheep came to Sydney under the charge of Mr. F. Bracher, one of the best judges and breeders of merino sheep for many years afterwards in Queensland. The sheep were at first taken to a property near Bathurst, and in 1830 were removed to Brindley Park, where the flock has been kept ever since. For several years the stud was under the management of Mr. F. Bracher, and the greatest care was exercised to keep up a high standard of excellence. In 1849 Mr. Bettington imported a Silesian sheep, and he and his sons were used in the stud till 1860. Mr. J. B. Bettington, the present proprietor of the stud, remembers the old sheep well. He was of the true German type, short in staple, very fine in the fibre, and his fleece, when a very old ram, weighed only 4 lbs. in the grease. In 1861 two rams bred by Prince Liechnowski, who was at that time one of the most celebrated breeders of merinos in Prussian Silesia, were purchased from Mr. E. K. Cox, who imported them, and in 1868 a prize ram, bred by Mr. C. C. Cox, of Brombee, was added to the stud. This was the only occasion on which the late Mr. Bettington introduced an Australian-bred ram into his stud, and from that time until 1885 no rams but those bred in the flocks have been used at Brindley Park. The present proprietor has made several experiments with sheep from Australian studs, but the result has not been satisfactory and the produce were got rid of. In 1885 a ram bred by Mr. Thomas Parramore

was tried, and his young stock are fairly promising, but not equal to the Brindley Park sheep. The wool of the Brindley Park sheep has always realized good prices, and the weight of fleece has been steadily increasing since the flock was established. When the wool was washed, the average weight of fleece for the whole of the flock, consisting of about 70,000 sheep, was over 3 lbs. In 1885 the wool of the sheep on the estate (except the lambs), averaged 8 lbs. 8 ozs., which would lose barely 50 per cent. in scouring. The stud sheep cut heavy fleeces, the rams' fleeces having weighed as high as 23 lbs. One ram when 12 years old cut 11 lbs. of greasy wool. This ram was exhibited when 11 years old, and the judges thought so much of him that they awarded him a special prize. The Brindley Park sheep have a very strong individuality. In their head, form, and fleece they exhibit all the signs of high breeding. They are very robust in frame, having well arched ribs and short legs. The wool is of excellent quality, has even and clearly defined serrations throughout the fibre. It is well put on all over the body, the thighs being very good, and the necks are full and ample. The present proprietor has lived on the estate since 1858 and he takes the greatest interest in the stud. The first stud now numbers about 900 sheep, and there is a second stud flock of about 2,000 head. I saw a large number of the sheep on Brindley Park and was greatly taken with them. The stud sheep are greatly prized throughout the north of New South Wales. Brindley Park is situated about two miles from the village of Merriwa. The nearest railway station is Muswellbrook, on the Great Northern line from Sydney.

THE LERIDA STUD MERINOS.

The Property of Messrs. Oakden and Browne.

Messrs. Oakden and Browne purchased their stud flock with the property known as Rugged Ridges, Otago, New Zealand, from Messrs. Julius, in the year 1872. The originals of Messrs. Julius's stud were obtained from Mr. Rich, of Mount Eden, and from Mr. Buckland, whose stud was descended from Mr. Rich's flock. To the sheep thus obtained Messrs. Oakden and Browne added German and Spanish merinos, some of which they imported themselves. Mr. Rich's flock at one time occupied a very high position in the Australian colonies, he having spared no pains or expense to secure the finest merinos in Europe. He appears to have included Rambouillet rams and ewes, as well as German merinos, in his flock. I gather the following particulars of the sheep in Mr. Rich's stud from the reports of juries of the New Zealand Exhibition of 1865:—One imported ram's fleece weighed 21 lbs. of unwashed wool of one year and three weeks' growth. Other fleeces weighed 20 lbs., 16 lbs., and 10½ lbs.; a ewe that had reared twin lambs yielded a fleece weighing 7½ lbs. The report contains the following remarks on the wool:—"When we consider that this great weight of wool is combined with the utmost fineness of fibre of the original Spanish merino, the great value of Mr. Rich's breed becomes at once so apparent as to need no further comment. When the late Mr. George Rich was on a visit to Europe, for the purpose of inspecting the finest flocks of the Continent, he showed some samples of Mount Eden wool to Baron Damier,

superintendent of the Imperial French merino flock at Rambouillet, and the Baron was so struck with the superiority of the wool that he requested Mr. Rich to send him a few of his rams, in order to improve even the famous Rambouillet flock."

When purchased by Messrs. Oakden and Browne, the special stud flock consisted of 93 ewes, 61 lambs, and 33 rams. It was known as the "exhibition" stud flock, and was kept by Messrs. Julius for breeding high-class rams for exhibition and for use in their extensive ordinary stud flock. This stud flock was removed by Messrs. Oakden and Browne to their property at Tapui Downs. Among the rams used in this flock by Messrs. Julius was a very fine imported German ram, who had been a great prize-taker. This ram they only secured when he was over twelve years of age, at a cost of 100 guineas. Imported Steiger rams, and a ram bred by Messrs. Learmonth, of Ercildoune, a champion prize-taker, were also used in the flock. When the stud flock became the property of Messrs. Oakden and Browne, in 1872, they imported a stud ram, bred by Mr. Thomas Parramore, of Beaufront, Tasmania. This ram, with his long, bright, free staple, nicked well with ewes whose wool, though fine, even, and dense, was rather short in staple. In 1875, two heavily fleeced Parramore stud rams were imported for use in the stud flock. In 1876, Messrs. Oakden and Browne imported six high-class ewes from the stud flock of Messrs. Wm. Gibson and Son, of Scone. These ewes were served by Messrs. W. Gibson and Son's stud ram "Prince," a grandson of the celebrated "Sir Thomas." A ram by "Prince" from one of these ewes was used in the stud flock.

The stud flock was very closely culled every year while in New Zealand; and when, in the end of March, 1879, Messrs. Oakden and Browne resolved to send their flock to Melbourne (on selling their New Zealand property), the breeding ewes only numbered 203. Of these 50 were culled out and left in New Zealand, and 153 ewes, 9 lambs, and 3 rams were shipped on board the *Albion* for Melbourne. After arrival in Australia the flock was kept at the Green Hills for about a year, and in July, 1880, it was removed to Messrs. Oakden and Browne's Lerida station, near Cobar, Warrego district, New South Wales, where, notwithstanding the extreme dryness of the seasons, the sheep have thriven remarkably well. In 1883, when the season was moderately good, several of the stud rams cut fleeces weighing over 20 lbs.; and in 1885, the worst season known for many years, 17 rams yielded an average of 17 lbs. of unwashed wool; the heaviest fleece was 19 $\frac{3}{4}$ lbs. Since this stud has been in New South Wales, the only rams added to the flock have been a couple of sires selected by Mr. Oakden from Messrs. Parramore's studs in Tasmania. The rams are in good favour with sheep-owners in Central Australia, and no difficulty is met with in disposing of the annual drafts.

THE KICKERBIL STUD MERINOS.

The Property of Mr. R. G. Higgins.

This stud was formed with a few sheep bred by M. Gilbert, of Wileville, France, and sent out to the Sydney International Exhibition, 1880. The originals of the

flock were brought from Spain in 1799 by M. Gilbert, grandfather of the present proprietor, when he was sent to select a large number of pure merinos from among the best Spanish flocks for the French Government. The little flock he brought back from Spain on his own account have remained ever since without the introduction of any foreign blood. The following notice of this flock appeared in the *Live Stock Journal*:—"The celebrated breeder of merino sheep, M. Gilbert, of Wideville, in France, has received the very distinguished honour of the Cross of the Legion of Honour for his unwearied industry in promoting the improvement of this race of sheep. A ram from his flock exported to Buenos Ayres, exhibited at Amsterdam, 30 months old, weighed 271 lbs. At 18 months it clipped 25 lbs. Two ewes also shown at Amsterdam weighed respectively 200 lbs. and 196 lbs." M. F. de Savignon, Professor of Agriculture, and Commissioner for France at the Sydney International Exhibition, and M. Crespy, who was in charge of the Rambouillet sheep shown at the International Exhibition, state that the Gilbert flock are believed to have been bred without any intermixture of foreign blood since the original sheep were brought from Spain. M. Gilbert's sheep are the largest pure merinos in France. On the disposal of the French sheep after the show, Mr. Higgins purchased all M. Gilbert's sheep, and removed them to Kickerbil, where they have been bred as a separate stud. The pure rams have been put to large-framed Australian ewes, and have produced some excellent stock. The pure French sheep are of very large size, but are unmistakably true merinos. Their wool is of a similar character to that of the Rambouillet sheep but more robust. They

have fine heads, well covered with wool. The ewes are so large in frame that most people unacquainted with them take them for wethers at first sight. It was their great frame and large fleece that attracted the attention of Mr. Higgins, who for several years previously had been endeavouring to establish a breed of merino sheep of large size and with a true merino fleece. Kickerbil is situated near the eastern end of the Liverpool Plains, about thirteen miles from Quirindi, on the Northern railway line. The soil is remarkably fertile, and in seasons of fair rainfall the pastures are magnificent.

THE BAROOGA STUD MERINOS.

The Property of Messrs. M'Farland Brothers.

This flock was formed in 1865 with a selection of ewes bred by Dr. Trail, of Collaroy, and two rams from the Ereildoune stud. Sheep from the flocks of Mr. James Stuart, of Symon's Plains, and Mr. Gibson, Tasmania, were added, and three rams were purchased at the first sale held by Messrs. T. and S. Learmonth, at Hay. Rams and ewes were at various times added from the studs of Sir Samuel Wilson, Ereildoune, Mr. J. L. Currie, Larra, and Messrs. Thos. Dowling and Son, Jellalabad. A few ewes from flocks of Messrs. Cox and Rouse, Mudgee, were also added to the flock. Finding that their sheep were becoming lighter in the fleece than they deemed advisable, Messrs. M'Farland decided to import some of the heavily woolled sheep from the Vermont flocks, U.S.A., with the view of counteracting this defect. The first importation consisted of two rams, named "Matchless"



Barooga stud ram „*The Lion*“.

(342) and "New York" (311), and two ewes. The rams, grazed 12 months at Barooga, cut fleeces weighing—"Matchless," 28 lbs. 12 ozs., and "New York," 32 lbs. 12 ozs. "Matchless" was considered a remarkably fine sheep, well shaped and of large frame (he weighed over 200 lbs.) His wool was long in staple, of good quality, dense, and even. One of his great points was his covering on the thighs and underneath. At the stud he was very successful. 25 rams by him were sold by auction at an average of £113, and others have been disposed of privately at still higher figures. The Vermont rams were used with Ercildoune ewes, and proved successful in giving a great increase of weight of wool to the progeny. Their 2-tooths cut an average of 16 lbs. 10 ozs. for rams and 14 lbs. 11 ozs. for ewes. Messrs. M'Farland were so satisfied with the result of their experiment that they resolved to make a second venture with Vermont sheep, and in February, 1882, they imported eight rams and four ewes. The sheep were bred by Messrs. L. P. Clarke, Rich, and Pierce, well-known breeders in Vermont. One of the ewes of this importation cut the extraordinarily heavy fleece of 27 lbs. 3 ozs., of twelve months' growth. She and two other Vermont ewes have since been sold to Mr. S. M'Caughey, of Coonong. Ten sheep, bred by Mr. J. H. Strowbridge, of California, and imported by Dr. Weir, were purchased, but, not being considered equal to the Vermont sheep, they were not placed in the stud flock. The Vermont sheep having proved such a good nick with the Barooga sheep, Messrs. M'Farland resolved to make a third importation, and in October, 1883, 10 rams and 60 ewes were selected by their agent, the Hon. W. G. Markham,

and forwarded to Australia. These sheep were from the flocks of Messrs. Buttolph, Bissell, Hardy, Moore, and other noted breeders of stud sheep in Vermont. In 1885 Messrs. M'Farland purchased, through Messrs. Pitt, Son and Badgery, of Sydney, the whole of Messrs. E. N. Bissell and Co.'s shipment of pure Vermont sheep, consisting of 40 rams and 10 ewes of the Paular breed. Messrs. M'Farland have imported, in all, 60 rams and 76 ewes (exclusive of the Californian sheep), all of which are registered in America, particulars of their breeding being given in the New York Sheep-breeders' Association Register. Messrs. M'Farland are satisfied that the American sheep have greatly increased the wool-bearing qualities of their sheep, and they furnish the following instances in support of their opinion:—42 rams, being of three-quarter American blood, yielded an average of very nearly 9 lbs. of scoured wool. One of the half-bred American rams, publicly shorn at Deniliquin two years in succession, cut the second year 23 lbs. 7 ozs. of greasy wool, which scoured 9 lbs. 4 ozs. In 1885 the half-American 2-tooth rams averaged 16 lbs. 9 ozs., and the 4-tooth rams 22 lbs. 11 ozs. of greasy wool. The produce of the Vermont rams are much more yolky in the wool than Australian merinos bred on the same pastures. This Messrs. M'Farland consider a great advantage, as it preserves the wool from being perished by the great heat of the Riverina sun. The Barooga sheep have been very successful in the show-yard. At Deniliquin the grand champion prize has been won by them two years in succession. They have also carried off the grass-fed championship and first prize for 2-tooth grass-fed ram twice in succession, in competition with

the most famous flocks in Riverina. At Corowa, also a leading show, the Barooga sheep have, twice in succession, been awarded champion prizes for ram and ewe. They have twice out of three times won what may be termed the "blue ribbon" of Australian fine-wool sheep husbandry—namely, the champion prize for ram at the Australian Sheep-breeders' Association Show, held in Melbourne. The ram, "The Lion," whose portrait is given, took first prize as 4-tooth, champion grass-fed, and grand champion prizes, at Deniliquin in 1888; first prize in his class and grand champion prize at Corowa the same year. In 1889 he was placed second to another ram bred and exhibited by Messrs. M'Farland, at the Australian Sheep-breeders' Association Show, Melbourne. Last season "The Lion" cut a fleece weighing 27 lbs. in the grease, which gave 11 lbs. of scoured wool. Barooga is situated on the River Murray, near Tocumwal.

THE L. U. E. STUD MERINOS.

The Property of Mr. Vincent Dowling.

This flock was founded in the year 1823, by Mr. James Walker, with a small number of imported sheep bred by Messrs. Turner, Trimmer, and Western, whose original sheep were from the pure merino flock bred by George III. With the imported sheep were used rams bred by Mr. E. Riley, of Raby, whose flocks were descended from sheep selected from the pure merino flock bred by the Elector of Saxony. I have a photograph of a sketch made of a ram and ewe of the imported stock which

were shown at Parramatta in 1828. The sketch is very indifferently done, but represents what were evidently two high-class sheep of the true Saxon type.

In 1835, Mr. Walker, in conjunction with Mr. E. Riley, imported some rams and ewes from the celebrated flocks of Gadegast and Steiger. The late Mr. J. R. Graham, a good judge of sheep and an enthusiastic lover of the merino, remarks of these sheep* :—"The imported rams were certainly the best I ever saw. They had no leather necks, nor wrinkles on shoulders or hind-quarters. In fact, their skins fitted them, and they filled their skins. I know of no sheep that they resemble so much in point of form as the best bred Australian merinos of the present day. Their fleece could not be surpassed."

In 1855, or 1856, Mr. Archibald Walker imported some rams from Germany, which exhibited all the indications of high breeding. They were used in the stud flock, and since their time till 1878 the rams used were selected from those bred in the stud.

The L. U. E. stud was for many years under the management of Mr. N. Bloomfield, who was a part proprietor. He was considered one of the best sheep-breeders in New South Wales, and the excellence of the stud is in a great measure due to his care and judgment in selecting the breeders.

The estate and stud flock were purchased by the present proprietor in 1878, and that year he introduced a couple of rams from the Rawden stud. The next year he purchased a ram bred by Mr. James Gibson, of Belle Vue, that was awarded the champion prize at the Sydney International Exhibition. Though a fine animal and

* "A Treatise on the Australian Merino."

well bred, being by "Eclipse," a grandson of "Sir Thomas," he did not nick with the L. U. E. ewes, and he and his stock have been eliminated from the stud.

A few years ago a ram of a most peculiar type was produced in this stud. He had a stout frame on short legs, with heavy folds of skin on neck and lighter ones on thigh. His fleece was remarkably dense all over his body, the staple was short and almost straight in fibre. His face was very woolly, but the point that attracted most attention was his horns, which were so fine that I could easily span one at the root. They presented a complete double spiral, projecting well in front of the face, and instead of the usual corrugations, they presented a smooth surface as if they had been rasped and sand-papered. This ram, named "Waxy," had a large quantity of yolk in his wool, with a small but well-defined black tip. His fleece in 1884 weighed 21 lbs. I saw a couple of rams got by "Waxy," and they both had his peculiarities of horn, fleece, and shape.

A fine ram, and somewhat out of the general run, was old "Clinker," who, though of pure L. U. E. blood, had a fleece of much more robust character than any sheep I saw in the Mudgee studs. "Clinker" and his sons have been freely used in the stud, though their wool has neither the character nor the quality that is liked at Mudgee. Mr. Dowling's object in breeding from this family is to keep up the quantity of wool. The ewes in the L. U. E. stud are heavily clad, and the quality and character of their wool is all that could be desired. I have seldom seen a sheep superior to the L. U. E. 4-tooth ewe that gained first prize in her class

at Mudgee, 1885. All the sheep in this stud have large, well-shaped frames. They cut good fleeces—"Clinker's" fleece weighed $21\frac{3}{4}$ lbs.; an old ram named "Wrinkley" cut $20\frac{3}{4}$ lbs. of greasy wool, and another stud ram cut a fleece weighing $19\frac{1}{4}$ lbs.

The culling, particularly since the stud came into the possession of Mr. Dowling, has been very close. The stud has been over sixty years in existence, and the breeding ewes now number only 600 head. The estate consists of hills of limestone formation with black soil flats. The climate is a pleasant one, being warm in summer, with very sharp frosts in winter. L. U. E. is situated close to the railway from Wallerawang Junction to Mudgee.

THE HAVILAH STUD MERINOS.

The Property of Mr. H. C. White.

There is no merino stud in all Australia that has held a more honoured place in the estimation of sheep-breeders than that bred on the Havilah estate. The founder of the flock was Mr. N. P. Bayly, who, before commencing stock-farming on his own account, was engaged in managing the property of the late Mr. W. Lawson. In accordance with a common custom in those days, he received a number of ewes as part payment of his salary, and with these he settled down among the hills a few miles to the south of the town of Mudgee. Mr. Lawson's sheep were of high quality, the originals having been derived from George III.'s flock. The Havilah estate derived its name in a peculiar manner.

The native name of the creek was "Burama," signifying "Make haste." At a picnic on the creek the Rev. C. J. Gunther washed a small quantity of soil in a dish, and discovering some grains of gold, he exclaimed "Havilah," the Biblical word for the land of gold. Mr. Bayly adopted the name, and it proved a land of gold to him. The gold was not in the soil, but on the sheep's backs—the golden fleece of Australia. Mr. Bayly bought sheep from Mr. George Cox, of Burrundella; but gradually bred up his original sheep till they constituted his whole flock. The rams used were bred in the flock till 1860, when he purchased an imported Saxon ram from Messrs. Walker and Bloomfield, of L. U. E. Mr. Bayly believed this ram, named "Old Billy," was the finest merino he had ever seen. In a letter to the *Australasian*, 16th August, 1866, he says:—"He produced wool which for density and quality I never saw equalled." Some time after, four imported German rams were used in the Havilah stud, and an exchange was effected with Mr. E. K. Cox, by which 25 Rawden rams were introduced into the Havilah stud. From this time, during Mr. Bayly's life, all the rams used were bred in the flock. Mr. Bayly was an excellent, but somewhat prejudiced, judge of sheep. He culled heavily, and brought his flock into great repute with stockowners throughout Australia. Of the quality of his wool some idea may be obtained from the following extracts from Messrs. Stable and Straecker's Circular:—"The highest prices obtained for the Havilah wool have been: In 1871, 3s. 6½d. per lb.; in 1872, 4s. 3d. per lb. (three bales were sold at that price); in 1873, 3s. 9½d. per lb.; in 1874, 3s. 5d. per lb.; in 1875, 3s. 4½d. per lb.; in 1876, 2s. 11d.

per lb.; in 1877, 3s. 3½d. per lb.; and in 1878, 3s. 10d. per lb.”

Mr. Bayly cared little for the distinctions of the show-yard, and used to say that any flock could produce a few good sheep. For years he did not exhibit, but not long before his death he competed for the prizes offered by Mr. H. C. White for a pen of 20 rams and one of 20 ewes, when he secured both prizes.

Shortly before his death Mr. Bayly, in deference to the fancy of the day, endeavoured to breed sheep with a long staple and white tip to the wool. He succeeded in his object, though thereby he sacrificed many of the good qualities of the old stock, the type of which was being completely altered.

After the death of Mr. Bayly the Havilah estate and stud flocks were purchased by the present proprietor, in 1881. The false step made by Mr. Bayly in altering the old type of the flock was remedied by breeding from all the old ewes then alive. Many of these ewes had been rejected from the stud by Mr. Bayly, because they were not long enough in staple for the prevailing fancy and had black tips to the wool. Under the management of Mr. Paul Hunt, the flock is fast returning to its old, admirable character. The ewes of the old type are most carefully treated, and not one is sold that will rear a lamb.

Mr. White, having thoroughly improved the property, is able to make experiments in breeding. He tried an Ercildoune ram, but he did not succeed. He was more fortunate with “Prince II.,” bred by Messrs. W. Gibson and Son, of Scone, Tasmania, and bought by Mr. White for 510 guineas. His stock are more promising than any

sheep by Tasmanian rams that I saw in the Mudgee district. His young ewes have all their sire's lustre of wool, with evenness and high quality. They have much handsomer faces than is usual with Mudgee sheep. The flock and stud rams are sold annually, by auction, on the estate, and they realize excellent prices. Though the country is composed of steep wooded hills, no dogs are used in working the sheep; and I noticed, in riding over the estate, that the sheep were remarkably quiet. The Havilah estate consists of limestone hills, with a few outcrops of granite. The country has been much improved by ringbarking a portion of the timber. The Mudgee railway passes within a couple of miles of the house.

THE BURRUNDELLA MERINOS.

The Property of Mr. George H. Cox.

In a letter written by Captain H. Waterhouse, about the end of July, 1806, and addressed to Sir Joseph Banks, the following passage occurs:—"I never had any other than Spanish rams with my flock, and, on my quitting the colony, I sold the flock to Mr. Cox, the paymaster, with the exception of a few to Captain M——" (Macarthur). The gentleman referred to in this extract was Mr. William Cox, of Clarendon, Paymaster of the 102nd Regiment, and grandfather of the gentleman whose name appears at the head of this article. The sheep he purchased were the originals of the Burrundella flock. They were derived from the first pure merinos imported into Australia, and their history, so far

as I have been able to trace, is given in that portion of this work relating to the introduction of the merino sheep into Australia. Mr. Cox did not hold in-breeding in much favour, and, consequently, drew the sires for his flock wherever he could obtain high-class sheep. He purchased many of his rams from Mr. Riley, of Raby, and Captain Macarthur, of Camden. Even in those early days the Raby flock was held in high estimation. An account is given in an old *Sydney Gazette*, published in 1822, of an Agricultural and Pastoral Show held at Parramatta. A Raby ram was exhibited at this show of such great excellence of form and fleece that the then enormous sum of £200 was offered for him and refused. The Camden flock was derived from the same source as Mr. Cox's sheep. The purity of blood of this flock was so jealously guarded that they were in-bred from the first, the only exception made being a few sheep from the pure merino flock bred by the King of England. Eventually the flock came into the possession of the late Mr. George Cox, son of Mr. W. Cox; and he, about the year 1830, removed it to Burrundella, Mudgee, where it has ever since remained. About this time, or perhaps a little earlier, six ewes from the Rambouillet flock (France), sometimes known as the Empress Josephine's flock, were added to the stud. These sheep were imported to New South Wales by the late Sir John Jamieson, of Regentville, Penrith. In 1864 a ram imported from Germany was added to the flock. He bore a fleece of clothing wool of very high quality, extremely dense, and his head was handsome and high-bred. The pedigree of this ram, and even the name of his breeder, I have been unable to ascertain. In 1863 a further addition to the stud was

made of two rams and six ewes, which were bred by J. F. Hoffschlaeger Weisen, in the Grand Duchy of Mecklenburg. They have been described as a fine lot of sheep, well covered with wool of a fair length of staple, and exhibiting great evenness of quality. Since that time no sires or dams have been introduced into the stud, except some rams from the Brombee flock of the celebrated Prince Lichnowski's Silesian strain, "than which," Mr. Cox says, "no better sheep have ever been imported into Australia." An experiment was tried in 1858 with a Rambouillet ram imported by the late Mr. C. Wentworth, in conjunction with the late Mr. E. B. Cornish. The result was not satisfactory, the wool of the progeny being harsh and wanting in character.

In 1879, the champion ram and ewe at the Sydney show (both bred by Messrs. W. Gibson and Son, of Scone, Tasmania), were purchased; but they did not nick with the Mudgee sheep, the produce losing in density what they gained in length of staple. Mr. G. N. Cox writes:—"No introduction of foreign blood has ever had a beneficial effect upon the Mudgee type of fleece, with the exception of the Silesian; the staple of which, in its chief characteristics, being very similar to the finest Mudgee wool. Fine, dense, and very elastic, with a very even top and small tip; a lock of Mudgee wool is not considered to show its true character unless it will stretch to twice its normal length." Of this elasticity and fineness Mr. Cox gives a good illustration. When in France a short time ago he procured some yarns spun at Rheims from Mudgee wool, 1 lb. of which will reach 35 miles, so fine is it, and so strong in the staple.

In the early days of New South Wales, when fine

clothing wool brought extreme prices, the Mudgee flockmasters turned their whole attention to producing high-priced wool, weight of fleece being never taken into consideration, and it was this prejudice in favour of very high-class wool which caused the purity of the flocks to be kept up, for, naturally, the pure merinos have the highest quality of wool. Of the character of the sheep bred at this time, Mr. Cox says:—"I can remember, when a boy, seeing a ram clothed and made much of that would not cut 2 lbs. of wool, but it was as fine as cobwebs." Latterly, breeding for fineness of fibre only has been abandoned, but the Mudgee sheepbreeders still consider it of the greatest importance to keep up the character of the true Saxon merino wool, and to maintain those minute curves or corrugations in the fibre which give the wool its extraordinary elasticity. The climate and pastures of the Mudgee district are not fitted to produce the great length of staple reached in the best Riverina studs, but the density of the Mudgee sheep fully makes up for their shorter staple.]

The Burrundella sheep have gained a great number of cups and trophies in the show-yards of the colony, and three gold medals for wool. The first was given by Messrs. Mort and Co., in 1862, for the best 10 fleeces in the grease. These were from ewes, and gave an average weight of 9 lbs. These fleeces with a second exhibit obtained silver medals at the London International Exhibition held the same year. Another exhibit of scoured wool, from Burrundella, competed for the gold medal and secured second place, the jurors' remark being that it was as nearly as possible equal to the

exhibit taking first prize (shown by R. J. Traill, of Collaroy).

The second gold medal, together with a diploma of honour (the highest award obtained by New South Wales wool), was gained at the Amsterdam Exhibition for wool in grease. The weight of the fleeces ranged from 12 lbs. to 16 lbs. At the Calcutta Exhibition, held in 1884, a gold medal was awarded to six fleeces—three hogget rams and three ewes—the former reaching as high as 18 lbs., and the latter as high as 14 lbs. .

The Burrundella wool, which is branded GX in diamond over Mudgee, has always taken a leading position in the London market, and has invariably been purchased by French manufacturers. It has realized as high as 4s. 0½d. per lb. The sheep on the estate cut excellent fleeces. In 1883 two flocks of cast ewes, aged respectively 7 and 8 years—the one with 87, the other with 90 per cent. of lambs—cut 7 lbs. of wool all round. In 1884, notwithstanding the drought in the early part of the year, 500 rams, chiefly yearlings, yielded within a fraction of 10 lbs. of wool each. For many years the average price per fleece of the sheep on the estate has been 6s. 4d. The total number of sheep on Burrundella is about 40,000. The first stud flock has always been kept down to 800 head. There is a second stud flock, which is never allowed to exceed that number. Burrundella is close to the town of Mudgee.

THE GALIMBINE STUD MERINOS.

The Property of Mr. J. D. Cox.

When the famous Brombee stud flock was dispersed in 1879, on the death of its founder, Mr. C. C. Cox, his brother, Mr. J. D. Cox, who had served two years' apprenticeship at Brombee, purchased 112 of the finest breeding ewes and 10 rams, one of which he used as a stud sire.

The Brombee flock, one of the most widely known and highly appreciated of all the famed Mudgee flocks, was formed by mating high-class Rawden rams with a choice selection of L. U. E. stud ewes. No other sheep were ever introduced into the stud, which owed its excellence to the skill and judgment shown by Mr. C. C. Cox in selecting and coupling the breeders. The rams purchased from the Rawden stud were by an imported Silesian ram, bred by Prince Lichnowski from choice stud ewes. The nick between the Rawden and the L. U. E. blood was a most successful one, and the Brombee stud rams were in high favour with sheep-breeders in all parts of the Mudgee district. When, at the present day, in any of the Mudgee flocks, a sheep of the old Brombee type is pointed out, it is almost certain to be one of the finest sheep in the stud.

The proprietor of the Galimbine stud breeds from none but sheep of the old Brombee blood, and his flock is consequently much inbred. So long as he can obtain the sheep he requires, Mr. Cox is determined to keep to his own stud. The second ram used in the stud was "Sir Walter Scott," a ram of pure Brombee blood, bred by Mr.

G. Rouse, of Biraganbil. This sheep was thrice awarded the champion prize at Mudgee. "Sir Walter Scott" was rented for only a portion of a season, but he left some remarkably fine sheep. One of his sons, named "Waverley," has been used in the stud. The wool is of fair length of staple and very high quality. The serrations are close and even, giving the fibre great elasticity. Most of the sheep have a small but well defined black tip. The culling in the Galimbine flock is very close. After seven years' breeding, and commencing with picked sheep, it numbered only 250 breeding ewes. Galimbine is about six miles from Mudgee.

THE RAWDEN STUD MERINOS.

The Property of Messrs. Cox Bros.

This well-known stud was formed about the year 1832, by the Hon. Edward Cox, grandfather of the present proprietors, with 100 ewes from the flock of Mr. William Edward Riley, of Raby. They were selected, as I learn from a letter in the *Australasian*, 10th August, 1870, by Mr. W. Dutton, considered one of the best judges of sheep and wool then living. Mr. W. Doughty, the writer of the letter, says of them:—"As to figure and density, as well as length, the Camdens could not compare with them." The stud was kept at Fernhill until it numbered 500 head, when it was removed to Rawden. Before commencing sheep-farming, Mr. Cox spent some years at Rawden, in Yorkshire, where he acquired a practical knowledge of the values and proper-

ties of wool. For some years after forming his stud flock the best rams bred by Mr. Riley were obtained for the use of the Rawden flock, and no other sires, except some bred in the flock, were used till 1849, when Mr. Cox obtained the first choice of a lot of rams imported by Mr. R. V. Delahunty. These rams were from the celebrated flock of Herr Gadegast. The ram chosen combined fineness of wool with evenness and density, but was somewhat short in staple, according to Australian ideas. No fresh blood was introduced into the stud till 1856, when the estate and stud flock came into the possession of the late Hon. Edward King Cox, father of the present proprietors. At that time some choice Bayly rams were used in the stud with the view of increasing the length of staple.

During a trip to Europe in the years 1854-5 Mr. E. K. Cox was very favourably impressed by the Silesian merinos, and soon after his return he imported, through Mr. H. Noufflard, five rams from the flock bred by Prince Lichnowski, in Prussian Silesia. These rams fully answered the most sanguine expectations. Their wool was beautifully fine and soft, dense, even, and of good length of staple. Three of the finest of these rams were retained for use in the Rawden stud: the two others were sold to Mr. J. B. Bettington, of Brindley Park, for 100 guineas each. The Silesian rams gave great satisfaction, their produce possessing the good qualities of their sires in a marked degree. In 1860, a ram of great excellence was purchased from Mr. R. Q. Kermode, of Mona Vale, Tasmania; but he did not nick with the Rawden ewes, and he was not persevered with. In 1869, a ram bred by Mr. David Taylor, of St. Johnstone,

Tasmania, was used in the stud, and proved a marked success. This ram, named "Clothworker," was by "King Billy," and his descendants are a credit to the famous stud from which they are descended.

Under the management of the founder of the flock, and for some time after it came into the possession of his son, the stud was bred with great care; the most minute attention was paid to each sheep, and every animal not reaching the standard was at once rejected. A close record was kept of the breeding and qualities of each sheep. Afterwards the flock was managed by a gentleman whose idea of excellence was dense fine wool and a heavy black tip. He was followed by a manager whose standard was a long staple and a white tip. The result of this dissimilar style of breeding was that the Rawden sheep were rapidly losing their old type when Mr. Standish Cox, one of the present proprietors of Rawden, undertook the management of the stud. To bring back the old type he worked largely on the old ewes, of which there were fortunately many in the flock. He used a pure Brombee ram named "Velvet," which he bought from Mr. J. D. Cox, of Galimbine, Mudgee. "Velvet" was, unfortunately, killed by dogs, but he left behind him some of the most promising young sheep I have seen. This ram's wool was of a most attractive character. The serrations were so close that they numbered 35 to the inch. Great care is taken in selecting the breeders in the stud flock, and so close has been the culling that the breeding flock now numbers only 300 head.

The highest distinction obtained by the Rawden stud was the exceptional one of carrying off the *Grand Prix*

at the Paris Exhibition of 1878, in competition with wools from all parts of the world. On the application of the juries the Minister of Commerce established the *Grand Prix*. The wool jury, consisting of thirty-two gentlemen, representing the different European countries and America, by a unanimous vote awarded the high honour of the *Grand Prix* to the bale of wool exhibited by the Hon. E. K. Cox. Before making their award the jury ascertained, by an examination of the Rawden wool then in London for sale, that the exhibit fairly represented the year's clip. The Rawden wool has taken many other prizes besides the *Grand Prix*—namely, a silver medal at the Paris Exhibition of 1855, bronze medals at the London and Philadelphia Exhibitions, besides others gained in New South Wales, numbering over fifty.

There is a second stud flock, consisting of 4,000 breeding ewes, descended from sheep purchased by Mr. E. Cox, in 1832, from the flocks of Mr. Thos. Icely (whose original sheep were from the Hampton Court flock), Dr. Douglass, and Mr. Wm. Cox, who bought his sheep from Captain Waterhouse in 1800. The rams used in this flock are those bred in the first stud. Rawden is situated on the railway line to Mudgee. The country is high and the winters are very cold.

THE COLLAROY STUD MERINOS.

The Property of the Collaroy Company.

During the years 1825 and 1826 Messrs. Richard Jones and Walter S. Davidson, the then proprietors of the Collaroy estate, imported direct from Leipsic 100

ewes and 20 rams, pure Saxon merinos, which were carefully selected from the best flocks by Messrs. Roemer, Angus and Co., of Leipsic. The next year Messrs. Jones and Davidson added to their pure flock by the purchase of some ewes from the celebrated Camden flock, but the number of these sheep is not known. In the records of the flock there is no note of any new blood being introduced until the year 1851, when Mr. E. Hamilton, who, with Mr. C. F. Clive, then owned Collaroy, purchased from the Australian Agricultural Company 3 Saxon rams which the Company had imported from Leipsic. A period of seven years then elapsed, during which no sheep were introduced into the stud. About 1858, Dr. R. J. Trail, at that time part proprietor of the Collaroy estate, purchased 6 pure Spanish merinos from the stud of Mr. Thos. Sturgeon, The Elms, Sussex, who bred them. This flock was descended from the pure flock bred by George III., and was of some note in the old country. At the Agricultural Exhibition of all Nations, held at Paris, June, 1856, Mr. Sturgeon was awarded first prize of 600 francs for a merino ram, and a gold medal as his breeder. The Sturgeon rams were used in the flock till 1866, when Dr. Trail imported 2 pure Rambouillet rams from the National Stud, France, only one of which was used in the stud, and he was tried for only one season. Since that time the rams used in the stud were all bred on the estate till 1882, when Mr. C. F. Clive purchased from Mr. James Gibson, of Belle Vue, Tasmania, a son of "Samson," who was by old "Sir Thomas." Some choice ewes were put to this ram, but the produce are not equal to the sheep bred in the stud.

Since its formation the Collaroy stud has been closely culled. The wool is of an excellent combing type, of good length, and at the same time dense. They are well covered on the points, and their backs are remarkably good. The select stud sheep have heavy folds on neck and chest, their thighs are broad, and they are well covered underneath. They have handsome, well-bred heads, without any sign of hardness. Their fleeces weigh well. In 1885 the grown sheep on the estate averaged 8 lbs. 4 ozs. of greasy wool, many of them being breeding ewes; and in 1886 the average was $7\frac{1}{2}$ lbs. of greasy wool of eleven months' growth. Some rams' fleeces, shorn for exhibition, ranged from 15 lbs. to $22\frac{1}{2}$ lbs., the average being $18\frac{1}{2}$ lbs. A dozen ewes' fleeces, shorn for the same purpose, ranged from $13\frac{1}{2}$ lbs. to 17 lbs., the average being $15\frac{1}{2}$ lbs. The wool is of a very useful description, and sells well in the London market. In 1878 it realized an average of 1s. 3d. per lb. for greasy wool, the sheep shorn being about 40,000. The Collaroy sheep have taken a very high stand in the leading show-yards of New South Wales, having carried off many first prizes and champion prizes at the Upper Hunter Pastoral and Agricultural Society's and Mudgee Shows. At Mudgee, one of the best sheep shows in Australia, the Collaroy sheep carried off three first prizes for ewes in 1883. In 1884 the Collaroy wool was awarded a gold medal at the Amsterdam Exhibition; and the same year, at Mudgee, the stud sheep were awarded three first prizes; also champion prizes for ram and ewe. In 1885 they gained champion prize for ram, two first prizes, and the President's Cup. The champion prizes at Mudgee, in 1884 and 1885, was carried off by a very fine ram,

who is still in the stud. I saw this sheep in 1887, and though his wool was a trifle shorter than when exhibited, he still displayed his old covering, density, and evenness. A 4-tooth ram in this stud cut 21 lbs. of greasy wool, and next year his unwashed fleece weighed 20 lbs.; his live weight was 186 lbs. I saw some of his stock, and admired them greatly. The estate and stud flock is now owned by the Collaroy Company. The estate is situated about a dozen miles from the small town of Merriwa. The nearest railway station is Muswellbrook.

THE TUBBO STUD MERINOS.

The Property of the Tubbo Estate Company.

This stud was formed early in 1885 by Mr. W. Leonard, with forty picked ewes purchased at the dispersal of the stud of Mr. J. D. Toosey, of Cressy, Tasmania. The ewes were from what was known as the "Sir Thomas" stud, all of which were of the blood of that famous sire. Many of them were by a celebrated ram named "Fortune," who was a grandson on both sides of "Sir Thomas." To these were added 70 old ewes purchased from Messrs. W. Gibson and Son, Scone. By arrangement with Messrs. W. Gibson and Son, the Cressy and Scone ewes were put to 4 choice stud rams, and 10 ewes were put to a half-American ram. The Tasmanian sheep were taken to a property in Riverina rented by Mr. Leonard, and soon after were joined to a small stud that had been depastured on the Tandara estate, Victoria. These sheep consisted of a small lot of ewes purchased from Messrs. G. Russell and Sons, Barunah Plains, and

some Tasmanian bred ewes purchased at the annual sales in Melbourne. They had been put to a ram named "King William," bred by Mr. Jas. Gibson, Bellevue, and purchased by Messrs. Raleigh Bros., and to a Borriyalloak ram. Soon after the flock was taken to Riverina Mr. Leonard rented a noted Wanganella stud ram, at a cost of 200 guineas for the season, and he obtained from Messrs. Austin and Millear the privilege of sending 9 choice Scone ewes to the grand champion ram "Invincible." Not being able to obtain a property to his liking in Riverina, Mr. Leonard disposed of his stud to the Tubbo Estate Company, in 1886, and it has since been kept on their property. In this stud there is a mingling of various types, with the Tasmanian predominating. Every sheep purchased in Tasmania was selected by Mr. M'Callum, who has had the charge of the stud since its formation. While the property of Mr. W. Leonard, though the sheep were grazed in rented paddocks, where they could not receive proper attention, they nevertheless carried off several important prizes. Since they came into the hands of the present proprietors they have taken a very high position in the prize lists at the Narandera, Wagga Wagga, and Junee sheep shows. These sheep are very heavily fleeced. While in Mr. Leonard's possession one of the stud rams cut 22 lbs. of wool, very light in the grease, and a ewe rearing a lamb cut 16 lbs. of bright, clean wool. The Tubbo estate is situated on the Murrumbidgee.

VICTORIA.

THE ERCILDOUNE MERINOS.

The Property of Sir Samuel Wilson.

THIS famous flock was established in its present home in 1848, when Messrs. T. and S. Learmonth purchased it from Sir Thos. Mitchell, of Barfold, near Kyneton. The history of the flock is a most interesting one, and it has a clear record back to the most famous "cavañas" of Spain. The original sheep were selected by Mr. William Forlonge, and were principally from the famous flock of the Elector of Saxony, than which there is no better bred stud of merinos in Europe. Mr. Forlonge brought his sheep to Tasmania in 1829, and they remained there for several years, sires from the flock being used by the leading flockmasters of the day. In the *Hobart Courier* of 2nd November, 1832, there is a notice to the effect that Mr. Forlonge has a small number of rams for sale, and that 4 rams were available to tup ewes at one guinea per ewe. One of these rams is named "Cliphausen," from which it may be assumed that some of the original sheep were from that flock. The beauty and high quality of Mr. Forlonge's sheep were spoken of by old Tasmanian sheep-breeders long after the flock was brought over to Victoria. When Mr. Forlonge arrived in Victoria, he found it difficult to get any country suitable for breeding high-class sheep, and after vainly endeavouring to get a sheep run, he sold his stud to Sir William Mitchell in 1846. They were taken to

Barfold, near Kyneton, but the country was cold and wet, and the sheep did not thrive. Messrs. T. and S. Learmonth, being anxious to secure a stud of merinos of undoubted pedigree, and of the highest excellence, purchased the sheep from Sir Wm. Mitchell, giving what was considered in those days a most extravagant price for them. There never was a better stock bargain made in Australia. The flock was removed to Ercildoune, where the fine pastures, combined with good management, soon effected an immense alteration in their appearance. In the management of the flock and the selection of the breeders, Messrs. Learmonth were ably assisted by Mr. Thomas Shaw, sen., to whose skill and judgment the high position since attained by the Ercildoune sheep is in no small degree due. In the year 1849, Mr. T. Shaw, sen., acting on behalf of Messrs. Learmonth, selected some rams from the Mona Vale Stud, Tasmania. These rams were used with good results in the Ercildoune flock. About 1851, Messrs. Learmonth purchased some pure Camden rams from the Hon. Wm. Campbell, which were also used in the stud. A few years after, a ram, the produce of some German sheep imported into Victoria by Captain Stanley Carr, was added to the stud. Captain Carr's sheep were selected from the best flocks in Saxony, and were perhaps the highest class sheep ever imported into Victoria. I saw them when a youngster, and well remember their high-bred appearance. The culling in the Ercildoune stud was always severe, and it was made stricter as the number of the sheep increased. In 1861 a further addition of 2 rams and 100 ewes from the Mona Vale flock was made to the Ercildoune stud.

In 1873 Messrs. Learmonth sold the Ercildoune estate and stud flock to Sir Samuel Wilson. In the hands of the present proprietor, the Ercildoune sheep have maintained their place as producing the most beautiful wool in Australia.

The character of the Ercildoune stud sheep is so well known to Australian sheep-breeders as hardly to need any description. They are well formed and of good size, and the wool may be cited as a specimen of what is known as "Australian merino wool" in its highest perfection. The staple is long, with high quality and great lustre. At the competition for two silver cups given by Messrs. J. H. Clough and Co., in January, 1863, Messrs. T. and S. Learmonth's exhibits were awarded first and second prizes, but they declined to accept both. In washed wool, their 80 fleeces were valued at 2s. 9d. per lb. (one of the judges offered 3s. per lb.), making the value of each fleece 10s. 7½d. Their greasy wool was valued at 8s. 2½d. per fleece. The prize wool was declared "admirable in every respect, and worth any money."

The prizes gained by the Ercildoune sheep and wool during the last 35 years have been very numerous. Wherever high quality of wool has been esteemed, there the Ercildoune have stood in the first rank. It is long in staple, and with such a beauty and lustre that wool-growers from all parts of Australia have always greatly admired it. At the International Wool Exhibition, held in the Crystal Palace, the Ercildoune wool was awarded first prize for washed wool, the Drapers' Company's gold medal, and a silver medal. It received the only gold medal given to Victorian wool at the Paris

Exhibition. At the Melbourne International Exhibition, 1880, the Ercildoune wool gained five first prizes, the grand champion gold medal for the best collective exhibit of merino wool, and the grand champion gold medal for the most valuable twenty-four ewes' fleeces. These fleeces averaged 5 lbs. 4½ ozs., and were valued at 2s. 8d. per lb., giving a return of 14s. 1d. per fleece. At the Melbourne Centennial Exhibition of 1888-9 the Ercildoune wool gained seven first prizes and the grand champion prize for the most valuable twelve ewes' fleeces; and at the Paris Exhibition, this year, Ercildoune wool has gained the highest award for washed wool.

The wool from Ercildoune has always realized extremely high prices. Indeed, it may be said to be one of the highest priced wools in the world, if not the very highest. When the prospect for the Australian wool-growers looked darkest, in 1886, some spirit was infused into the flockmasters of these colonies by the splendid prices realized by a shipment of 56 bales of washed Ercildoune wool, sold that year at the London sales, January and March. The prices reached as high as 4s. 4½d., and the average was the splendid price of a fraction over 4s. per lb. for the 56 bales. The Ercildoune estate is situated a few miles from the Windermere station, ten miles from Ballarat.

THE TANDARA STUD MERINOS.

The Property of Messrs. Raleigh Bros.

The Tandara flock, though not an old one, has yet attained a good position among the Western Victorian studs. It is descended from that famous flock bred in the early days of the colony by Mr. John Aitken. The original sheep consisted of 1,600 ewes from the Mount Aitken flock, purchased in 1862, to which were added 2,000 old ewes bought from the late Mr. T. R. Rider, who got them from Mount Aitken. With these ewes were coupled Camden rams, bred at Mount Hope by the Hon. Wm. Campbell. The Mount Hope rams were followed by some rams bred by the late Mr. John Cumming, of Terinallum. This was before the imported Silesian rams were used in Mr. Cumming's stud. The Terinallum rams effected much good in the stud, and improved both the quantity and quality of the wool. The next rams introduced into the flock were from the Borriyalloak stud. A ram bred in the Barunah stud was also used, and 200 ewes from the Barunah second stud were added to the flock. In 1883 the champion ram "King William," bred by Mr. James Gibson, of Bellevue, was purchased in Melbourne. He was by "Sanscrit," a famous son of "Sir Robert." Unfortunately, this ram died in 1885; but his stock gave so much satisfaction that Messrs. Raleigh determined to try the effect of another infusion of Tasmanian blood. They purchased "Density II.," bred by Mr. G. F. Thirkell, of Darlington Park, by "King David," a son of "Magenta," and a ram named "No. 8," bred by Mr. Thomas Parramore, of Beau-

front, by "Erl King," by "Sir Robert," in his day considered the best sire in Tasmania. They are both fine rams, "Density II." being one of the most taking sheep I have seen. He combines excellent quality of wool with evenness of covering, is very well shaped and extremely robust. "No. 8" has a fleece of higher quality and of good weight; his fleece, in 1885, weighed 18 lbs., while "Density II." cut 19 lbs. of wool. In 1885 Messrs. Raleigh tried an experiment with a Wanganella ram, "No. 81," by "Invincible." This ram, then 6 years old, and fed all his life on the natural pastures, cut 18 lbs. of wool, light in grease and without a particle of tip. He is being tried as an experiment, which, if successful, will be followed up.

"King William's" stock have given great satisfaction. In 1885 forty-seven 2-tooth rams, being the whole of his male progeny, yielded an average of 12 lbs. 12 ozs. of unwashed wool. The same year the clip of the Tandara flock, consisting of 10,000 sheep, exclusive of lambs, yielded an average of 7 lbs. $9\frac{2}{3}$ ozs. of unwashed wool, which realized in London $11\frac{7}{8}$ d. per lb., being sold before the rise in price took place. The proprietors of Tandara have reduced the area of their estate to 10,000 acres, and in future purpose to devote their attention entirely to breeding stud sheep, for which purpose the country is well fitted. The Tandara sheep are extremely hardy, and this quality makes them great favourites with the sheep-farmers in Central Australia. The following instance is a proof of this hardihood. In 1885 a drover named Richard Coulter started from Deniliquin, in charge of 466 Tandara rams, his destination being the Afton Down station, near Hughenden, in Northern

Queensland. The season was one of the worst ever known, and the distance the sheep had to travel was 1,700 miles. In many places there was not a blade of grass to be seen, and for 300 miles the sheep lived on the scrub cut down for them. By the exhibition of rare skill and judgment, Coulter managed to deliver every ram at the Queensland station, and throughout their long journey the sheep averaged nine miles per day. A better proof of the wonderful hardihood of Australian merino sheep could not be given, or of the skill of Australian drovers. The extra stud flock at present consists of 500 breeding ewes. There is a second stud in which there are 1,000 breeding ewes. The sheep are annually culled by the proprietors themselves. At the Deniliquin Show, 1889, the five 2-tooth ewes that were awarded the first prize cut fleeces that averaged within a small fraction of $12\frac{3}{4}$ lbs. Three rams' fleeces exhibited at this show weighed—"Banjo," 2 years old, 22 lbs.; "Young Jubilee," 3 years, $25\frac{1}{2}$ lbs.; and "Old Jubilee," 4 years, $19\frac{1}{2}$ lbs. The Tandara estate is composed of alternate red soil plains and belts of timber. The climate resembles that of Riverina. The estate is situated about 27 miles from Sandhurst. The Yallook railway station is on the property.

THE LARRA STUD FLOCK.

The Property of Messrs. J. L. Currie and Co.

The history of this well-known stud, which for many years held the foremost place in the estimation of sheep-breeders, not only in Victoria, but in almost all the

Australian colonies, must be of interest to all connected with the breeding of sheep. Of the origin and treatment of this flock, I have received the following narrative from Mr. Currie :—

“ In the year 1844 I commenced sheep-breeding with a flock of ewes the progeny of sheep bred by Mr. W. Bethune. Judging by the experience I have since obtained, they must have been extremely well bred sheep, well formed, and with a long and well defined staple of wool. Coupled with these ewes were rams the produce of sheep imported by Mr. Furlonge. Between 1844 and 1848-49, which year I note as the starting point of my stud flock, I disposed of the Furlonge rams, and used others from the best sheep-breeders of the day. Among them were a lot of rams, numbering about 60, from the stud flock of Messrs. Riley and Barker, whose stud sheep were from imported stock selected from the celebrated flocks of Gadegast and Colonel Von Schonberg. In 1848 or 1849, with the aid and by the advice of Mr. Thomas Shaw, senior, I selected from my breeding flock sixty of the very finest ewes, amounting to about $1\frac{1}{2}$ per cent. of the flock, and with these selected ewes I coupled the pick of ten pure Camden rams of very high quality, which I obtained from the Hon. William Campbell. I look upon these ten rams as being the foundation of my flock. With the nucleus thus formed, by careful and continuous selection—and, up to 1858, with an occasional supply of rams from the Hon. Wm. Campbell's Camden flock, and thenceforward to the present time, by careful selection alone—without the introduction of any outside rams, my stud flock has been formed.

“ I made some experiments with Saxony rams, and also

with a high-class Rambouillet ram, but with such unsatisfactory results that I cleared the originals and the produce out of my flock. My stud flock has produced rams which have realized in the market as high as 350 guineas, and which have taken prizes wherever exhibited."

The Larra sheep have sound, robust constitutions, and stamp their progeny with their own good qualities, while for size and shape they are unsurpassed by any Victorian-bred sheep. The Larra merinos have taken a great many prizes, but their great merit lies in the fact that they seem to suit nearly every district in Australia. The character of the wool may be estimated by the remarks made by the judges at a wool show held at Messrs. J. H. Clough and Co.'s wool stores in January, 1863, when Mr. Currie's wool gained second prize, Messrs. T. and S. Learmonth being first. Of Mr. Currie's exhibit the judges remarked:—"Commended in every respect as a pattern for wool-growers; beautifully bred, and scarcely to be improved on for quality, breed, and length." The exhibit was from 2-tooth ewes, only eleven months' growth. The value of each fleece was 7s. 11½d.

THE LARRA LUSTRE MERINO.

About 1864 a ram lamb was born in Mr. Currie's stud flock which at once arrested the attention of everyone who saw him by the peculiar whiteness, brilliant lustre, and very long staple of his wool. Lambs of a similar character had appeared in the stud flock on several

occasions, but, from an opinion that they were of delicate constitution, they were castrated. This lamb was of such a handsome form, and possessed such a beautifully lustrous fleece, that Mr. Currie resolved to preserve him. When he was old enough, he was put to a few picked ewes which showed a somewhat similar character in their wool, to see if the type could not be reproduced. The result answered admirably, and a small flock showing this lustrous quality was formed. Mr. Currie was so much pleased with these sheep that, after testing them for several years, he put the rams of the new family to his finest ewes. The "Lustre" sheep are decidedly of a more quiet temperament, are more shapely in form, have shorter legs, and produce a heavier fleece than the other sheep in the flock. The wool is much straighter in the pile and has less crimps than ordinary merino wools, the serrations in some instances being very faintly marked. Lambs having this character of wool have frequently been observed in Victoria, nearly always in flocks which have a strong infusion of the Camden blood. In 1871, Mr. Currie sent a couple of the "Lustre" fleeces to England, in order to get the opinions of the best experts as to its value. He received the following opinion from Messrs. John Smith and Sons, of Bradford:—

"We have examined the wool sent by you, and referred to in yours of the 8th inst. We are very sure that the peculiar, straight, thin, and silky fibre cannot be too highly spoken of, and would be fully appreciated in the trade. We must add that, taken with all its qualifications, it is the best sample of wool we ever saw."

Messrs. Armytage, Sanderson, Murray and Co., of London, to whom the wool was sent, forwarded the

fleeces to M. E. Richou, and received from him the following opinion of its value:—

“LE CATEAU, *Dec. 1, 1871.*

“J. SANDERSON, ESQ.

“MY DEAR SIR,—I have received your favour of the 27th November. I have examined carefully the two fleeces of Mr. Currie. They are most suitable for our purposes, and their lustre and silkiness give them an advantage upon the ordinary J. L. C. clip. I think that bales composed of such a bright wool would fetch a long price. It is a quality of great value for light colours, or to be mixed with silk. The French breed of sheep called “Mauchamp” had not at all the same character. It was more like goat’s wool, and could not have suited our purposes. I shall be most happy to give you any other information if you want it.—Yours, &c.,

(Signed) “ED. RICHOU.”

With such favourable opinions as to the value of the “Lustre” wool, Mr. Currie felt fully justified in breeding largely from the new family with his finest stud ewes, and the progeny entirely justified his highest anticipations. When the flock had reached 100 ewes, Mr. Currie took the pains to test the weight of wool, and found the average to be 8 lbs. 5 oz. in the grease, two-thirds of the number having reared lambs. A notice of this new family of merinos, written by myself, appeared in the *Australasian* on the 9th June, 1877, which attracted the attention of Mr. Charles Darwin, and it was by him sent to some of the leading agricultural papers in England.

THE TITANGA STUD MERINOS.

The Property of Mr. J. L. Currie.

The Titanga estate was originally a portion of a squatting run taken up by my uncle, Mr. John Brown, who named it Gala, after his birthplace in Scotland. He kept the run till 1852, when he sold it to Mr. John Aitken, at that time the most celebrated breeder of pure merinos in Victoria. Mr. Aitken sold off all the sheep he purchased with the run, and restocked the station with 10,000 sheep of his own breeding. The following is the history of this famous old flock. Mr. John Aitken arrived in Victoria in August, 1835, in the schooner *Endeavour*, bringing with him a lot of the finest merinos that were to be obtained in Tasmania. In making his selection he was assisted by Messrs. Edmund and Frank Bryant (themselves well known as breeders of high-class sheep). I have been unable to ascertain the number of sheep Mr. Aitken brought from Tasmania, but the late Mr. Matthew Bryant, of Cairn Curran, informed me that they cost £500. Mr. Aitken leased this valuable lot of sheep from Messrs. Bryant on terms, a plan much in vogue at the time. He settled on a piece of country near Melbourne called Mount Aitken, and prospered so well that he was soon able to purchase Messrs. Bryant's interest in the flock. Mr. Aitken was a first-class judge of sheep, and never hesitated about price when he saw a ram that pleased him. In 1845 Mr. E. Bryant sent to Victoria a select lot of rams bred by the Cressy Company, Tasmania, and for the pick of this lot Mr. Aitken gave the then extravagant price of £200. I have heard several

old colonists speak of this shipment of rams as being very fine, and scarcely surpassed by the best merinos of the present day. In 1850 Mr. J. P. Rowe imported a shipment of Silesian rams and ewes, which he selected from the flock of Prince Lichnowski in Prussian Silesia. Mr. Rowe examined all the finest merino studs in Europe, and fixed upon this as the best. For the pick of this lot Mr. Aitken paid the high price of £250.

Mr. Aitken's sheep were ever accepted as the highest type of merinos bred in Victoria in his day. I have seen many of them when a boy, and always noticed their remarkable evenness and the high quality of their wool. In density they were all that could be desired. A friend of mine, who was very intimate with Mr. Aitken, in writing about him makes the following remarks:—"The improvement in the merino sheep of Victoria previous to the origin of the Ercildoune and other stud flocks, was owing more to Mr. Aitken than to any other sheep-breeder in the country. His aim was to increase the weight of fleece, and to keep up the fineness and density at the same time. This he accomplished by adding to the length of the staple of the wool. He spared no expense or trouble in introducing fresh blood into his flocks possessing the qualities he desired." Mr. Aitken sold Gala to Mr. John Mathieson in 1856. The latter gentleman told me that Mr. Aitken was very proud of the sheep on the station, and would not sell it until he (Mr. Mathieson) promised not to resell. Shortly afterwards the tenure of squatting stations became very insecure, and Mr. Mathieson, not liking the risk of holding such property, sold Gala and the flock to Mr. Andrew Lyell, who soon after disposed of the station and sheep

to Mr. Robert Adams, and he in turn sold them to Mr. James J. W. Wilson, in 1859. During these changes the sheep were not so carefully managed as in Mr. Aitken's time, and there being a great demand for sheep in New Zealand, most of the young sheep were sold to go to that colony. When the station came into the hands of Mr. J. W. Wilson, the breeding flock consisted mainly of old ewes, the majority of which were bred by Mr. Aitken. The property was owned by Mr. J. W. Wilson, in company with the late Mr. John Wilson and the late Mr. A. Buchanan. Mr. J. W. Wilson eventually sold his interest to Messrs. J. Wilson and A. Buchanan, and in 1871, the station having been converted into a freehold, the partners separated, Mr. J. Wilson taking the eastern half, which retains the old name of Gala, and Mr. A. Buchanan taking the western half, to which the native name of Titanga was given. The flock was also divided at the same time. During the partnership of Messrs. Wilson and Buchanan, rams bred in the Ercildoune stud were used in the flock. In 1873 the Titanga stud sheep were rearranged under the supervision of Mr. J. Shaw, and in 1875 a ram bred by Mr. J. L. Currie was bought at Skipton and used as a sire. Though always highly thought of by sheep-breeders, the Titanga stud sheep did not succeed in taking any high prizes at shows till 1877, when the champion prize at Skipton was awarded to a Titanga ram. At the Deniliquin Show, 1877, Mr. A. Fiskien made a friendly wager with Mr. F. Peppin, of Wangaratta, that he would show five Victorian-bred 2-tooth ewes against a like number of ewes bred in Riverina, the wager to be decided at the next Deniliquin Show. Mr. Fiskien obtained five young ewes from the Titanga stud,

and Mr. Peppin showed ewes of his own breeding. The verdict of the judges was unanimously in favour of the Titanga sheep. I never saw five finer young sheep than those which gained the prize. They were admirably covered, and the quality and evenness of their wool was greatly admired by the large number of flockowners present.

On the death of Mr. Alex. Buchanan, the estate of Titanga and the stud flocks became the property of his brother, Colonel Buchanan. In November, 1887, Mr. J. L. Currie purchased the property and stud flock. Though Titanga adjoins Larra, Mr. Currie keeps both stud flocks separate.

THE GALA STUD MERINOS.

The Property of Mr. J. L. Currie.

Until the year 1871 Gala, with the Titanga stud, formed one flock on the old Mount Elephant run. (For its history previous to that date see the notice of the Titanga stud.) The sires used have been drawn from the stud of Mr. J. L. Currie, of Larra, and from within the Gala stud. The wool of the Gala sheep is bright and soft, true Australian merino wool of the highest quality. It is held in high estimation by European buyers, and on one occasion 80 bales of greasy wool realized 1s. 8d. per lb. in the London market. Gala is situated near the centre of the great plain in the Western District of Victoria. Though not nearly the richest grazing ground in the colony, it is certainly the healthiest pasture land for sheep in Australia. The Gala

sheep are of good size, and yield a fair weight of wool of the finest quality. After the death of Mr. J. Wilson the Gala estate and stud flock were purchased by Mr. J. L. Currie, in 1889.

THE TERINALLUM STUD MERINOS.

The Property of Messrs. Bailey and Wynne.

Terinallum was taken up as a squatting station by Messrs. Lang and Elms, and stocked with sheep imported from Tasmania. Mr. George Russell bought the station in 1846 for the Clyde Company, and for several years after the rams used at Terinallum were from the Company's Golf Hill flock. The sheep at Golf Hill were descended from some very superior merinos imported from Tasmania, with which were coupled high-class rams bred by Mr. W. A. Bethune, of Dunrobin, Tasmania. A few rams bred by Messrs. S. and J. Austin, Tasmania, were used. Messrs. Austin's sheep were mainly derived from the Dunrobin stock. The Golf Hill sheep were characterized by density and fineness of wool with short staple. About 1848 or '49 some rams bred by Mr. H. Anderson, of Borriyalloak, were used in the Terinallum flock, where they effected much improvement by giving greater length of staple. When the late Mr. John Cumming purchased Terinallum, in 1857, the wool had a good character in the London markets, the price per lb. and weight of fleece being quite up to the average of the leading flocks in the Western District. In October, 1860, Mr. Cumming formed a stud with a selection of the finest ewes in the breeding flock, and to these he put eleven rams which he purchased from Messrs. T. and S. Learmonth, of Ercildoune, at what

were then considered exceptionally high prices. Mr. T. Learmonth, writing to Mr. Cumming about these rams, says:—"All these rams, except one that was not shorn, have taken one or more prizes, and the two old ones (3 years old), to my fancy, are the finest rams I have." Mr. Cumming also used rams bred by Mr. John Bell, of Warrambeen, Mr. J. L. Currie, of Larra, and Mr. Thomas Shaw, of Worriwyrite. Rams from the flocks named were used for some years, and then, with the view of effecting further improvements in his sheep, Mr. Cumming resolved to try an experiment with some of the best rams that could be procured in the pure flocks on the continent of Europe. His brother, Mr. George Cumming, of Mount Violet, who had considerable experience among merino sheep in Australia, undertook the selection, and he was assisted by a gentleman of much experience in the fine-wool trade. After examining some of the most noted flocks of pure merino sheep in Europe they made a selection of rams from the stud flock of the Countess Stosch, in Silesia. The sheep in this flock were from the Super-Electoral flock, and were bought originally from Prince Lichnowski. The Countess allowed the selection to be made from the reserve rams of the flock, all the sale rams of the season having been previously disposed of. Count Stosch, who died during the previous year, had always taken an active part in the management of the flock. Five of the rams thus obtained were put with a lot of the stud ewes that were selected for the purpose in 1873. The produce was very satisfactory, the young stock being closely covered with a fleece of fine, clear wool, with a moderate amount of yolk.

The success of the Terinallum sheep has been attributed to the infusion of Silesian blood, the type of which is strongly marked in the stud. In 1874 twenty of the young rams of the Silesian strain were chosen and put to a carefully selected lot of ewes. Their produce gave great satisfaction, being closely covered with fine bright wool of longer staple than the first cross. The Silesian strain was then introduced throughout the whole stud and the general breeding flock on the estate, with the result that the weight and value of the wool was materially increased.

In 1879, Mr. Cumming, in conjunction with his brother, Mr. G. Cumming, purchased the famous ram "Duke of Darlington," bred by Mr. Thos. F. Cumming, of Stony Point, for 500 guineas. This ram was by "Sir Thomas" from "Duchess," her dam "No. 29," by "Lustre," by "Longwool," by a son of an Ercildoune ram. "Duchess" is by "Nugget II.," by "Nugget," bred by Mr. James Stewart, of Symmon's Plains, Tasmania. The "Duke" was only shown once, when he took first prize as a four-tooth at the Australian Sheep-breeders' Association Show, Melbourne. After the death of Mr. John Cumming, the executors purchased Mr. George Cumming's interest in this ram. The "Duke" has nicked well with the Terinallum ewes of the Silesian strain. At the Australian Sheep-breeders' Association Show in 1871 a two-tooth ewe thus bred was awarded first prize in her class and champion prize, she being the first two-tooth that ever attained such a distinction at this show. Since then nearly all the Terinallum prize sheep have been by the "Duke of Darlington," or sons of his, from ewes of the Silesian strain. The "Duke"

is the sire of the following stud sires:—"The Earl," champion ram at Melbourne in 1884, and special prize as the most valuable fleeced ram in the show—as a four-tooth he cut 22 lbs. 1 oz. of unwashed wool; "The General," first prize taker at Melbourne and Ballarat in 1882, and second champion at the former show; "Remus," the sire of some very excellent stock, sold to Mr. Booth for 300 guineas; and "Duke 4th," awarded the grand challenge champion shearing prize of 100 guineas, at Ballarat, in 1883. Several high-class rams were purchased at the sale of the Stony Point flock, which were used in the stud. The Terinallum sheep have taken a great many prizes since the stud was formed. In four years, 1881, '83, '84, and '85, they gained eight first prizes, seven champion prizes, and sixteen special prizes at the Australian Sheep-breeders' Association and Ballarat shows, where the best merinos in Victoria meet in competition. The rams from Terinallum have always realized high prices in the principal markets of Australia. The most sensational sale was in Melbourne, 1883, when six rams realized the unprecedented average of 645 guineas. This high average was caused by one ram bought by the Hon. Thos. F. Cumming at the extravagant price of 3,150 guineas.

The country at Terinallum is volcanic, consisting of stony rises and open exposed plains. The estate has been greatly improved by large plantations of blue-gums, pines, and other trees in lines across the track of the prevailing wind. For some years past the clover burr has spread through the paddocks, the seeds of which have caused a great depreciation in the value of the wool. During the lifetime of Mr. John Cumming

the stud was under the management of Mr. R. M'Kenzie, and to his skill and care much of the success of the stud in the show-yard is due.

THE JELLALABAD MERINOS.

The Property of Messrs. Thomas Dowling and Son.

The originals of this well-known flock were imported from Tasmania by Mr. J. D. Bloomfield, and were the property of Mr. Keith King. For some years they were depastured at Jancourt along with sheep from the flock of Mr. J. D. Toosey, of Cressy, Tasmania. Mr. E. R. Bostock then took possession of Mr. King's sheep and removed them to Jellalabad. In the year 1851 Mr. Thomas Dowling purchased Jellalabad, and with it the flock, then numbering about 5,000 sheep. For some time Mr. Dowling used rams bred by Mr. J. L. Currie, of Larra, and on one occasion he purchased three rams of Mona Vale blood from the late Mr. J. G. Ware. In 1862 Mr. Dowling visited Tasmania and purchased three rams, bred by Mr. G. Thirkell, of Darlington Park. Thirteen of the finest ewes in the breeding flock were then selected to form a stud, and with them was used the finest of the Darlington Park rams. Three rams of the first dropping from the stud ewes were exhibited at Skipton, at that time the leading fine-wool sheep show in Victoria, where they were awarded first honours. When put up for sale they realized £70 each, a high price at that time.

In 1864 Mr. Dowling purchased a number of rams selected from some of the most noted flocks in Tasmania,

and a small lot of ewes, purchased from Mr. Thomas Gibson, of Eskvale, were added to the stud. One of these Tasmanian rams proved very successful; his first produce took a high stand at the Skipton show, and the next year they secured first prizes in every class in which they were exhibited; they also gained champion prize for ewes. In 1872 the ram "Sir James," by "Sir Thomas," was purchased from Mr. James Gibson, of Bellevue, for 215 guineas. He was shown at Skipton in 1874, and was awarded champion prize. The next ram of note added to the stud was "Wool King," bred by Mr. David Taylor, of St. Johnston. "Wool King" was purchased from his breeder by Messrs. Henty and Balfour, and in order to secure him Messrs. T. Dowling and Son agreed to pay 300 guineas in cash and give half the produce of 100 picked ewes that were put to him the first year. This made "Wool King" one of the highest priced rams that had been sold up to that time in Victoria. The progeny by "Sir James" and "Wool King" proved very successful in the leading show-yards of Victoria. The Jellalabad sheep exhibit in their fleeces and high-bred appearance the influence of their Tasmanian ancestors. With the exception of the rams drawn from Mr. J. L. Currie's flock, all the sires and dams have been imported from Tasmania or are descended from Tasmanian sheep. The sheep are not large, but they are beautifully formed and have very robust constitutions. They are admirably covered, and their wool is dense, even, of high quality, and lustrous. They have proved themselves very profitable sheep, the return of wool for the ten years from 1871 to 1881 ranging from 6s. 3d. per head, including lambs, in 1872, to 6s. 9d. per head in 1874, the return in each case being net.

These returns are for the whole flock, which for many years has numbered about 16,000 head. The annual increase of lambs is about 3,250. This fine stud was for many years under the management of the late Mr. Chas. Dowling, one of the most skilful sheep-farmers in Australia. The Jellalabad estate is situated on the Mount Emu Creek, a short distance from the little hamlet of Darlington. The country is open plains, the only shelter being the high banks of the creek. In winter the wind sweeps across this open country with great force. Sheep reared on these plains are naturally hardy, and are able to withstand exposure to any amount of heat or cold.

THE COLIBAN PARK STUD.

The Property of Mr. W. H. Davidson.

The founder of this flock, the late Mr. W. Degraives, took great pains, and spent a considerable sum of money, in importing the best sheep that could be bought in Germany and France, and to these he added ewes from the then best flocks in Victoria. In giving a record of this flock I am unfortunately obliged to rely mainly on my own memory, as the present proprietor, when he purchased the Coliban Park estate and flock, got very few particulars as to the breeding of the stud sheep. So far as my memory serves, it was early in the sixties that Mr. W. Degraives imported a number of rams and ewes from the Imperial flock at Rambouillet, and some rams from the best Saxon flocks. To the imported sheep were added some ewes from the 'famous old flock bred by Mr. John

Aitken, and others bred by Mr. John Bell, whose sheep at that time had no superior for high quality of wool. I recollect seeing the first produce of the stud offered for sale in Melbourne. They were very well woolled sheep, but the type was not a fashionable one at the time. They exhibited in a pronounced degree the influence of the Rambouillet blood, and there was then a prejudice against that style of sheep. Mr. Degraives was partial to the Rambouillet sheep, and used them largely in his stud. I have seen samples of wool taken from some of the imported sheep. That of the Rambouillets is of an excellent description, having pronounced serrations evenly marked throughout, and the quality is excellent. Only one sample of Saxon wool has been preserved; it is of the highest quality, and is of much longer staple than was usual with Saxon merinos in those days. Owing to the Victorian sheep-breeders not caring for the style of sheep bred in the Coliban Park flock, the sheep have not been heard of in public for fully twenty-five years. In 1869 sires from Tasmanian studs were used in the flock, and since that time all the sires introduced have been of Tasmanian blood. Since he purchased Coliban Park, on the 13th May, 1886, Mr. Davidson has continued to use Tasmanian rams in the stud. He has purchased some high-class sires from Mr. T. Gatenby, of Pisa, Mr. W. H. Bennett, of Bloomfield, and Mr. D. Hall, of Bowerbank. This flock has never had the advantage of a resident proprietor until lately, and as Mr. Davidson is an enthusiast in fine-wool husbandry there is every prospect that sheep from this stud will be brought into a prominent position among Victorian flocks. At the Centennial Wool Show, 1889, he was awarded a first order of merit for a

bale of lambs' wool, and another for a bale of ewes' wool. Coliban Park is situated near the little hamlet of Elphinstone, on the Sandhurst railway line. The country consists of lightly timbered rolling downs of granite formation.

THE WARRANOOKE STUD MERINOS.

The Property of Mr. Charles Ayrey.

The Warranooke estate was originally occupied as a squatting run by Messrs. Ayrey, Nicholl and Darnell. The country is extremely level, and consists of open plains and patches of timber. The climate is dry, but with a moderate amount of rainfall the soil gives an ample pasturage for stock. The sheep with which the squatting run was stocked were purchased from the late Mr. Charles Ayrey (father of the present proprietor), who held a pastoral property near Birregurra. The originals of his flock were imported from Tasmania, and were considered at that time good specimens of merino sheep. Mr. Darnell retired early from the partnership, his share being purchased by his partners. In 1858 Mr. C. Ayrey, the present proprietor, made his first acquaintance with the flock, and on the death of his uncle he purchased his interest in the estate and undertook the entire management of the flock. He at once set to work to improve the wool-bearing qualities of the sheep by the introduction of some rams purchased from Mr. E. Willis, of Kooloomurt, whose flock is one of the best bred in Australia. These rams were followed by some sires bred by Mr. Thomas Dowling, of Jellalabad, and Mr. Thomas Shaw, of Wooriwyrite.

In 1863 a stud was formed with a selection of the finest ewes in [the breeding flock. In 1869 some rams purchased from Messrs. T. and S. Learmonth were used in the stud, and were followed two years after by rams bred by Mr. J. L. Currie, of Larra. About this time ten ewes bred by Mr. William Cumming, of Mount Fyans, were added to the flock, and were followed by three rams and twenty ewes bred at Ercildoune. In 1877 three rams bred by Mr. James Gibson, of Bellevue, were added to the flock. They were all of "Sir Thomas" blood, and one of them, named "Victor," divided the championship at Ballarat with an Ercildoune ram. "Victor" was greatly admired, and an offer of £600 for him was refused by Mr. Ayrey. In 1877 an important addition was made to the stud of a ram and ten ewes purchased from Messrs. W. Gibson and Son, of Scone. Since then no rams have been introduced into the stud save a ram named "Young Tom," bred by Mr. Stephen White, of Merrybindinyah, New South Wales, and a ram bred by Mr. W. H. Bennett, of Bloomfield, Tasmania. "Young Tom" was a perfect specimen of a merino sheep. He was purchased for 350 guineas, and the day after the sale 500 guineas could have been readily obtained for him. He was by "Sir Thomas 2nd" (for whom Mr. White paid 604 guineas when he was an old sheep) from a ewe bred by Mr. James Gibson, so that on both sides "Young Tom" was of Bellevue blood. The stock from this ram are remarkably good. Mr. Ayrey has not confined himself to any one line of blood in selecting sires for his stud. Wherever he has seen a ram that he thought would improve his sheep he has purchased him. Like all genuine sheep-farmers, Mr. Ayrey performs the important operation of

selecting and coupling the breeders himself. The Warranooke sheep are of large frame and well shaped. Their wool is of high quality and very long in the staple. It was this great length of staple and the fineness of fibre that gave these sheep such an advantage in the show-yards when they came to the front a few years ago. The list of prizes taken by the Warranooke stud sheep since 1880 is a long one. They have scored high honours in the best company in Australia. The following are a few of the principal prizes taken by them:—In 1880 they gained two first and two special prizes at the Australian Sheep-breeders' Association's Show, and three first prizes at Ballarat; in 1881 two first prizes at Ballarat; in 1882 five first prizes and champion for ewes at Melbourne, five first prizes and champion for ewes at Ballarat; in 1883 champion ram and ewe and four first prizes at Ballarat, champion ram and ewe and three first prizes at Deniliquin. Of late Mr. Ayrey has not exhibited frequently, but his sheep always take a good position in the prize lists. The estate, which has for many years been the property of Mr. Charles Ayrey, is situated on the Richardson River, a few miles from the Glenorchy railway station, on the main line to Adelaide.

THE CARR'S PLAINS STUD.

The Property of Mr. H. H. Wettenhall.

The Carr's Plains estate is situated on the east bank of the Richardson River, nearly opposite to Warranooke. It was purchased about 32 years ago by Mr. Alexander Dennis. For some time the stud flock was owned by

Messrs. Dennis and Wettenhall, but lately the latter gentleman, who has had the care of the stud since its formation, became the sole proprietor of the flock. The country consists of plains and open forest. The soil is rich, and when there is a fair amount of rain the pasture is excellent. As a rule in this district the summers are long and dry, and the grass is withered early in the season. The sheep are well grown, and cut heavy fleeces of wool of excellent quality.

The stud flock was formed in 1863 with 100 ewes selected from the breeding flock. To these ewes were put two rams purchased from Messrs. T. and S. Learmonth, of Ercildoune, and three years after an imported American ram of "Old Grimes" blood was purchased in Melbourne and used in the stud. At the time he was bought the American ram was four years old, and his fleece of sixteen months' growth weighed 21 lbs. 10 ozs. in the grease. The next year he cut 19 lbs. of unwashed wool of exactly twelve months' growth, and at six years of age his fleece (unwashed) weighed 15 lbs. While on Carr's Plains this ram received no food but the natural pasture, and he served over 100 ewes each year. The effect of this introduction of fresh blood was very marked. The American ram gave a distinct character to the sheep, and greatly increased the growth of wool. His first produce, when 2-tooths (shorn as lambs), gave an average of 8 lbs. 4 ozs. of unwashed wool. Of their robustness and vitality the following is an illustration:—A farmer in the neighbourhood found one of the half-American lambs astray, and it was made a present to him. It is still alive and healthy, being now over twenty years old, and has given birth to 18 lambs. The "Grimes"

ram had great hereditary power, and stamped his character on his progeny in an unmistakable manner. On one occasion one of his lambs strayed into the general flock and it was picked out of 3,000 lambs without there being any occasion to refer to the ear-mark. After the American ram there were used in the stud, rams bred by Mr. T. F. Cumming, of Stony Point, Mr. W. Cumming, of Mount Fyans, and Messrs. Thomas Dowling and Son, of Jellalabad. In 1879 two rams bred by Sir Samuel Wilson, of Ercildoune, named "Golden Drop," by "Golden Fleece," and "Wonder," who took third prize in his class at the Australian Sheep-breeders' Association in 1879, were used in the flock. At the sale of Mr. Thomas F. Cumming's stud Messrs. Dennis and Wattenhall purchased "Longwool 3rd," considered by many experienced stockowners the best ram in the Stony Point stud. In 1882 a ram named "Hercules," bred by Mr. W. H. Gibson, of Fairfield, was added to the stud. He is not large-framed, but he is well shaped and has a very attractive appearance. His wool is of excellent quality, dense, and remarkably well covered on the points. For the last-named quality he could not be surpassed. I had an opportunity of examining the ewes put to this ram, and found them large-framed, large-fleeced, and well worthy to be mated with such a sire as the Fairfield ram. The lambs, at the time I saw them, were about three months old, and nothing could be more promising. The Carr's Plains sheep cut good fleeces, and the wool realizes excellent prices. In 1883 the average per sheep was 3 lbs. 10 ozs., and for lambs 1 lb. 8 ozs. of spout-washed wool. They have been fairly successful at the leading sheep shows.

THE BERRY BANK STUD MERINOS.

The Property of Mr. Jos. Mack.

This is a most interesting flock, being a successful attempt to mingle the good qualities of two studs differing greatly in their characteristics. In August, 1882, Mr. Mack purchased from Mr. A. M. Campbell, then owner of the Ellengerrin estate and flock, 400 ewes of all ages at the price of 5 guineas per head. Among these ewes were some of the best sheep in the stud. The Ellengerrin sheep were famous for the beautiful quality of their wool, but it did not yield sufficient weight per fleece to please Mr. Mack, and he determined to raise the average weight of fleece by using rams having the quality he desired to secure. He purchased from Messrs. Austin and Millear, of Wanganella, four stud rams, one of which (by "Premier") cost 300 guineas. Almost invariably in Australia when rams brought from a distance have effected improvement they have been taken from south to north. A reverse importation has generally resulted in failure. Mr. Mack's experiment proved a pronounced exception to the general rule, as the union of the two studs resulted in a most happy nick. The produce possesses much of the brightness and quality of the Ellengerrin ewes, combined with the dense covering and large robust frames of the Wanganella studs. Mr. Mack's name was soon seen figuring prominently in the prize lists of the leading sheep shows of Riverina and Victoria. A pronounced success was carrying off the first prize in the class for aged rams at the Australian Sheep-breeders' Association's Show, 1889. In this class were exhibited some of the finest sheep in

Australia, and many were brought out in the perfection of condition. The class was a large one, and the verdict of the visitors was that Mr. Mack's sheep deserved the honourable position awarded to it. The Berry Bank sheep have rapidly come into good request for their profitable qualities. Reared on the open plains, they are extremely hardy, and thrive well in any climate. This season Mr. Mack has been very successful in carrying off many of the leading prizes at Wagga Wagga and Albury. The Berry Bank estate is situated near the centre of the Great Western Plain of Victoria. The post town is Lismore.

THE ELLENGERRIN STUD MERINOS.

The Property of Mr. Alex. Armstrong.

This stud was formed by Mr. A. M. Campbell in 1863 with 131 ewes and 3 rams of Saxon merino blood, purchased from Mr. James Riley. Mr. J. Riley gives the following account of the originals of this flock :—" I went to England in 1846, and the following spring went over to Germany, and after seeing all the best flocks in Saxony, purchased from Carl Augusta Gadegast, of Thal, near Oschatz, 8 rams and 15 ewes; also 7 rams from Lieut-Col. von Schonberg, of Rothschonberg, Saxony. They were derived from the original flock bred by the Elector of Saxony at Lohmen." Mr. Riley was an excellent judge of sheep, and he made such a good selection from the Gadegast flock that the proprietor required him to enter into a bond not to use the sheep in Germany, before he would complete the purchase. At the time these sheep were imported Mr. Riley was in

partnership with Dr. Edward Barker in a sheep station on the Wannon River, and at the dissolution of the partnership in 1850 he purchased Dr. Barker's interest in the stud flock. In 1862 Mr. Riley sold the flock to Mr. W. F. Y. Burnell, and almost immediately after purchased from him 146 ewes and three rams, the pick of the flock. Mr. Riley was unfortunate in having his little flock worried by dogs, and in 1863 he sold what sheep he had left to Mr. A. M. Campbell, who took them to Ellengerrin. In 1868 the Hon. Wm. Campbell inspected the Ellengerrin stud, and recommended the use of an American ram he had purchased in Melbourne. The produce of this sheep were well covered, and their wool was of long staple. In 1870 Mr. Campbell purchased the prize ram "Larra," from Mr. J. L. Currie, and he obtained some ewes from Mr. Currie and Mr. Thomas Shaw. In 1830 rams bred in the Barunah Plains stud were used, and since then a number of ewes from that stud have been added to the flock. In 1886 Mr. Campbell sold Ellengerrin and the stud flock to Mr. Alexander Armstrong, by whom it is still held. The property is situate about 20 miles from Geelong.

THE KOOLOMURT STUD MERINOS.

The Property of Mr. Edward Willis.

This flock has been in the possession of one family since the year 1824, when Mr. Richard Willis, of Wanstead Park, Tasmania, father of the present proprietor, purchased 50 young ewes and three rams of the Paular flock bred by George III. These sheep were

imported to Tasmania the same year, where they were reared with the greatest care as a separate flock. In 1834 some rams were used from Mr. W. Forlonge's flock. In 1837 Mr. R. Willis presented his two sons, Edward and William, with a number of young ewes and some rams from his pure flock, which were brought to Victoria the same year. In 1844, by arrangement with Sir W. Mitchell, the Forlonge stud flock came into Mr. E. Willis's keeping, and for a couple of years rams from that stud were used with some families of the Koolomurt sheep. In 1856 Mr. Willis purchased the whole of the selected 2-tooth rams of the season from the Hon. Wm. Campbell's Camden flock. The pick of these sheep were used in the Koolomurt stud. In 1860 Mr. Willis visited Europe, and purchased from Adolph Steiger, of Leutewitz, Saxony, eight sale rams and two rams the pick of the reserves. The reserve rams were used in the stud and were found very useful in keeping up the density of wool. At the same time Mr. Willis imported six rams bred by William Spangenberg, Ousen, being the pick of his reserves. Mr. Willis has kept up certain families in his flock, each being distinguished by special characteristics, so that for many years past he has not found it necessary to go outside his own stud for sires. The premier classes of ewes and rams are marked in the ear in Indian ink with a number, and by keeping a record there is no difficulty in ascertaining to which family any particular sheep belongs.

THE BRIE BRIE STUD MERINOS.

The Property of Messrs. J. Sanderson and Co.

This flock is derived from the old Borriyalloak stud, which was founded in 1836 or '37 by the late Mr. Henry Anderson, who was understood to have brought his sheep from Tasmania. The first rams used by Mr. Anderson were bred by Mr. J. Aitken. Another lot of rams used in the flock were bred by Mr. M'Gill, of Burrumbeet, whose sheep were descended from the celebrated "Raby" flock in New South Wales. Ercildoune rams were also used in the flock. Mr. Anderson afterwards obtained one or two choice rams from Mr. James M'Lanachan, of Ballochmyle, Tasmania, from which he bred rams for his own use, and for sale, out of a lot of selected ewes. Mr. M'Lanachan's sheep were, at one time, famous in Tasmania; they were small, but well woolled. His stud sheep were always kept strictly pure. In 1851, Mr. Anderson sold Borriyalloak to the late Captain Ormond, who soon after disposed of it to his son, the late Mr. Francis Ormond. The sheep descended from the Ballochmyle rams were always kept separate by the Messrs. Ormond, the rams used being purchased from Mr. J. Aitken and Mr. John Bell. Mr. E. G. Greeves became the proprietor of Borriyalloak stud in 1864, he having leased the estate from Mr. Ormond. Greater care was then taken of the special flock, the services of Mr. J. Shaw being obtained to select the breeders. In 1864 an Ercildoune ram was used in the stud. The first sheep from Borriyalloak put on the Brie Brie estate was in 1879, when 450 stud ewes and some of the finest stud

rams were purchased, and with these first and second studs were formed. When the Borriyalloak stud was sold by auction, in October, 1885, 600 of the best stud sheep and lambs, including the whole of the year's dropping of lambs to the Wanganella sire "Wool King," by "Premier," were secured for Brie Brie. The nick of the Wanganella ram and Borriyalloak ewes has been a very successful one. The Brie Brie estate is situated in the shire of Mount Rouse. The soil is volcanic, the rainfall good, and the pasture abundant.

THE CARNGHAM STUD MERINOS.

The Property of the Hon. Phillip Russell.

Carngham was originally taken up as a squatting station by Messrs. Baillie in 1839, and stocked with sheep which they purchased from Mr. John Wedge, of the Werribee. I have been informed by Mr. Wedge that the originals of his flock were purchased by his father, the late Mr. Edward D. Wedge, in England, from a nobleman whose name he could not recollect, but he knew that he got his original sheep from Spain. I believe this nobleman could be no other than Lord Somerville, who was an enthusiastic breeder of merino sheep, and who went to Spain in 1801 in order to procure the finest specimens of the breed.

Mr. E. D. Wedge brought his little flock, consisting of about 50 ewes and a few rams, to Tasmania in December, 1826, and established them at Snakebanks, about 24 miles from Launceston. The imported rams

were used in the flock till Mr. Forlonge's pure merinos arrived in the island, when some rams from that flock were obtained by Mr. Wedge. From 1832 the sheep were under the management of Mr. J. Wedge, and in 1836 or early in 1837 he drafted off a considerable number of the best of the young ewes and sent them to his brothers in Victoria, who then held a squatting station on the Werribee Plains. The original sheep are described by Mr. Wedge as very fine and dense in the wool, but of small frame. In comparison with Mr. John Aitken's sheep, they displayed higher quality but were much smaller. After being a few years on the Werribee Plains they increased considerably in size. Mr. John Wedge states that, while the sheep were in Tasmania, no rams were used except those from Mr. Forlonge's stud and rams bred in the flock. Messrs. Russell and Simson purchased Carngham from Messrs. Baillie in 1843, and from that time the rams used in the flock were obtained from the Circular Head Company, Mr. M'Gill, and Messrs. Donald and Hamilton. (The breeding of Messrs. Donald and Hamilton's sheep will be found in the notice of the Langi-Kal-Kal merinos.) In 1853, Mr. Russell became sole proprietor of Carngham, and from that date till 1862 rams bred by Messrs. Learmonth, of Ercildoune, were used in the flock; also some rams selected by Mr. Thos. Shaw, in Tasmania, for Messrs. Learmonth, and purchased from those gentlemen by Mr. Russell. From 1862 till 1868 rams bred by Mr. Thomas Shaw, jun., of Wooriwyrite, were used, and since that time Mr. Russell has used rams of his own breeding, with the occasional introduction of a first-class ram from the stud flocks of Mr. Kermode, Tasmania, and Mr. J. L.

Currie, of Larra. The system pursued has been to cull the stud flock very closely, using none but the very best animals for breeding purposes. The result has been highly satisfactory, and at the present day the Carngham clip of wool is one of the most valuable in all Australia. The report of the London brokers on the clip of 1878 contains the following remarks:—"One of its traditional characteristics—unusual uniformity and evenness—is well maintained. . . . The lambs' wool is as near perfection as is possible. . . . The classification we found excellent, and the bales corresponded in all respects with the specification." The 50 fleeces of washed wool exhibited at Messrs. R. Goldsbrough and Co.'s wool show, held in February, 1878, were specially mentioned by the judges as being (with Mr. Kermode's exhibit) "the best bred and highest class wool sent in." At the wool exhibition held by Messrs. Hastings Cuninghame and Co., in February, 1879, Mr. Phillip Russell took first prize for 50 washed merino fleeces of the highest value per lb. from 2-tooth sheep which had been shorn when lambs (unskirted). The average weight per fleece was 3 lbs. 15 $\frac{2}{3}$ ozs., which the judges valued at 3s. 2d. per lb. The judges reported of this exhibit that it was a wool of excellent quality and breed. He also obtained first prize for washed fleece wool of any merino sheep over twelve months old, of the highest value per lb., in a bale of not less than 200 lbs. weight, and from not more than 150 sheep (skirted). The exhibit was from 150 sheep of mixed ages from the general flocks; the net weight at 371 days' growth was 216 $\frac{3}{4}$ lbs., which was valued at 3s. 9d. per lb. The judges remark:—"A wool of excellent quality, silky, well grown, and very clear in staple."

At the International Wool Exhibition held in Sydney, 1879-80, Mr. Russell took the following prizes :—Washed wool : first for 6 rams' fleeces, first for 6 ram hoggets' fleeces, second for 6 ewes' fleeces (16 exhibitors), and second for 6 ewe hoggets' fleeces (10 exhibitors). Greasy wool : first for 6 ram hoggets' fleeces (11 exhibitors), and second for 6 ewe hoggets' fleeces. The competition at this exhibition was very close ; the finest clips from New South Wales, Victoria, Tasmania, South Australia, and Queensland being represented.

The Carngham estate consists of 22,225 acres, divided into thirty-five paddocks. The soil, though not rich, carries a good sward of grass, and is very healthy for stock. Mr. Russell is careful never to overstock his land.

Some correspondence took place in the columns of *The Australasian* a few years ago as to the value of the leading clips of wool in Victoria. In order to furnish full information on the subject, Mr. Russell published a certified statement of the Carngham clip of 1878. The flock consisted of 18,916 sheep and 4,682 lambs. The average weight of hot water and spout-washed wool was 3 lbs. 6½ ozs. per sheep, and 1 lb. 4½ ozs. per lamb. The wool sold at an average price of 2s. 3¾d. per lb. The Carngham sheep have been regularly shown for many years at Ballarat and Melbourne, and have always taken a good position in the prize lists. The estate is situated about 25 miles west of Ballarat.

THE WOORIWYRITE STUD MERINOS.

The Property of Mr. Thomas Shaw.

Though this stud has not taken such a prominent position before the public as some of the leading Victorian flocks, it is nevertheless of as good lineage, and has been as carefully bred, as any flock in Australia. Mr. Shaw purchased the sheep with which he formed his flock from Messrs. T. and S. Learmonth, of Ercildoune, about 30 years ago. They were from what is known among Victorian sheep-farmers as the old Ercildoune flock, which was formed with a lot of ewes purchased by Messrs. Learmonth's father in Tasmania, and 2,000 ewes from the Anstey-Barton flock brought to Victoria by Mr. George Anstey, who then purposed settling in Victoria, but changed his mind and sold the sheep to Messrs. Learmonth at 2 guineas per head. Of this old flock, Mr. T. Learmonth, writing to Mr. Shaw in 1863, makes the following remarks:—"We never had the least admixture of foreign blood of the English breeds. From the time your father (Mr. Thomas Shaw, sen.) took the management of our breeding a marked improvement took place, partly by judicious selection, and partly by the use of rams from the flock of Mr. Kermode, Tasmania, and from that of Mr. William Campbell, of Mount Hope. The last of these sheep passed into your hands and those of Mr. A. Anderson, of Skipton, in 1859." In all about 2,000 ewes from the old Ercildoune flock were purchased by Mr. T. Shaw. Messrs. Learmonth were careful sheep-breeders, and used no rams but those of the highest class in their flock. The old Ercildoune flock had a strong infusion of

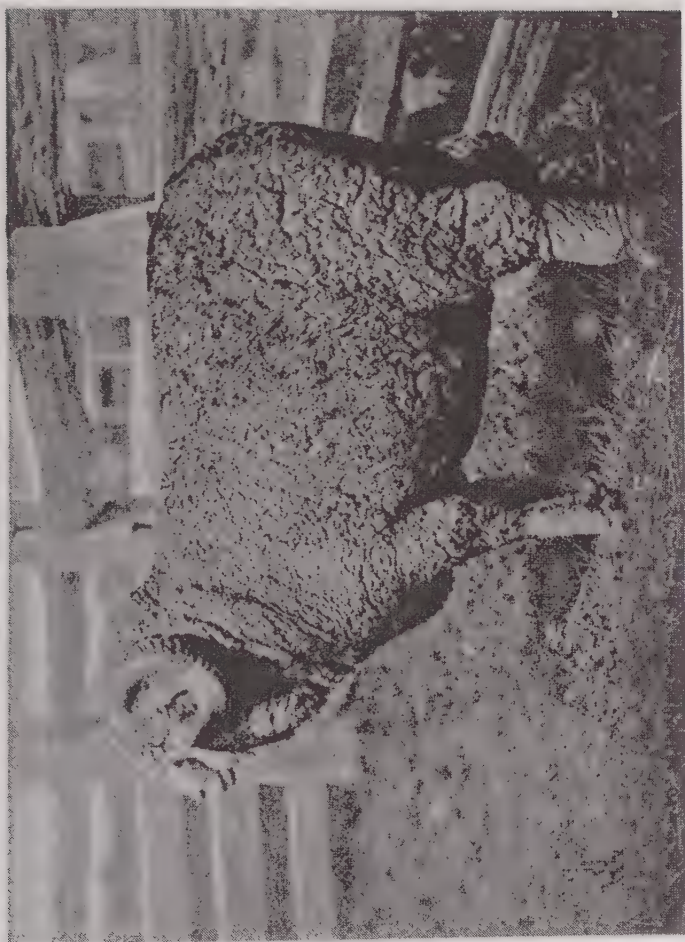
Camden blood in it, for, besides the Mount Hope rams, of which mention has been made, the late Mr. Robert M'Dougall, of Arundel, who, in 1842, had the management of the Ercildoune herd of cattle, remembers Messrs. Learmonth purchasing rams from Mr. H. Mackay, who managed Boilwarra station, near the head of the Werribee river, for Mr. James Macarthur. This gentleman brought his sheep overland from New South Wales, having obtained them from his father, Mr. Hannibal H. Macarthur. He was a cousin of the Macarthurs of Camden, and his sheep were derived from the famous old Camden flock. Mr. James Macarthur's sheep were but little noticed by old Victorian sheep-breeders, but Mr. W. C. Yuille, who purchased a draft of young ewes from the flock, told me they were the finest sheep he ever saw. Mr. Francis Henty remembered Dr. Learmonth purchasing a selection of young rams from his father's flock in Tasmania over 40 years ago. These rams were sent to Ercildoune.

Mr. Shaw formed his stud with the pick of the flock, the breeding of which has been described. The first sires used were Camden rams, purchased from the Hon. William Campbell, of Mount Hope. Mr. Shaw bought the whole of the season's rams and selected the best for his own use. He afterwards used a ram purchased from Mr. W. Skene, which was bred from some German sheep imported by Capt. Stanley Carr. The result was not satisfactory, and the ram and his progeny were thrown out of the stud, and a return was made to the Camden blood. The next addition to the flock was 40 ewes from the Mona Vale stud. The wool of these sheep is described as being of magnificent quality but somewhat short in staple. For some time they were kept as a

separate stud, but after a few years the finest were selected and added to the Wooriwyrite stud; the others were put into the general flock. A further addition of the pick of 300 ewes from the modern Ercildoune stud was then made to the Wooriwyrite flock. For many years past no rams save those bred in the flock have been used as sires, save a couple of high-class sires given to Mr. Shaw by Messrs. Learmonth, and one ram purchased from Sir Samuel Wilson for 300 guineas.

An enthusiast in fine-wool husbandry, and an ardent admirer of what is known as "the Australian merino," Mr. Shaw has endeavoured to breed up to his own standard of excellence, and has taken but little heed of the various types of merinos that have at times come into fashion. Having obtained some of the finest specimens of those sheep which placed Australian merino wool at the head of all others, he declined to risk the qualities he prized so highly, merely on the chance of increasing the weight of fleece, by the introduction of untried foreign blood. He has effected improvements in his sheep by the slow but sure process of carefully and skilfully selecting the breeders, and he has followed one line of breeding for the last 30 years.

The Wooriwyrite wool has always realized good prices in the London market. On two occasions it has realized as high as 1s. 9½d. per lb. for greasy fleece. This was the first Victorian wool sold at that rate. Wooriwyrite is situated on the southern edge of the great plain, about 14 miles from Camperdown.



„Sir Thomas“.

by Mr. Jas.

by W.

M

THE MOUNT FYANS STUD MERINOS.

The Property of Messrs. William Cumming and Son.

The Mount Fyans estate was taken up originally as a squatting station by Mr. Lachlan Mackinnon, who stocked it with sheep, of which all that is known is that they came from Tasmania. The flock was augmented in the year 1841 by the addition of some sheep Mr. Mackinnon obtained from Messrs. T. and S. Learmonth, of Ercildoune, in exchange for cattle. These sheep were of what is known as the old Ercildoune flock. For a short time the station was owned by Mr. Montgomery, who knew nothing whatever of sheep husbandry. In the year 1856 the late Mr. John Cumming, father of the present proprietor, purchased the property, and from that time the sheep have been managed with the greatest care and skill. By purchasing the finest rams to be obtained for money, and by a judicious mating of the breeders, the flock has been advanced to the foremost place among the famous merino studs of Australia. For some years after Mr. Cumming purchased the property it was managed, in conjunction with the Stony Point run, by his sons, William and George Cumming.

About the year 1856 Messrs. W. and G. Cumming purchased several thousand sheep from the late Mr. Neil Black, of Mount Noorat. They were a well-bred lot of sheep, but were in a bad condition from footrot through having been reared on unsuitable pastures. These sheep were descended from a small lot of rams and ewes imported from England by Messrs. Neil Black and Co., in 1841, and selected from the pure merino flock bred by

Lord Western. To these were added a choice lot of merino ewes, selected for the company by Mr. McKillop in Tasmania, and a lot of 600 maiden ewes, bred by Mr. Roadknight, was afterwards added to the Mount Noorat flock. In 1846 Messrs. N. Black and Co. purchased from Mr. Hugh Gordon, of New South Wales, 60 pure merino rams bred from the famous Camden flock, mingled with sheep from the flocks of Mr. Coghill and Mr. Hannibal Macarthur, whose sheep were closely bred to the Camden flock. In 1849 Mr. N. Black imported 20 rams from Sydney, which were believed to be Camden blood, and the same year 18 rams imported from Tasmania were added to the Mount Noorat flock. These rams were bred by Mr. J. Cox, of Clarendon, whose sheep were at that time among the finest in the island colony. From the foregoing it will be seen that the Mount Noorat sheep were highly bred, and though in a bad state from being reared on a soil and pasture quite unfitted for merinos, they possessed all the requisites for building up a high-class flock. Mr. Neil Black was an excellent judge of stock, and a great stickler for purity of blood. His reason for disposing of the sheep was because the experiment, carried over a series of years, had convinced him that the climate and pastures of Mount Noorat were quite unfitted for rearing merino sheep.

In the year 1860 Mr. William Cumming became owner of Mount Fyans, and soon after he made a selection of the finest ewes in the flocks on the Mount Fyans and Stony Point stations, and with them formed his stud flock. To these ewes were put three rams bred by Messrs. T. and S. Learmonth. One of these rams was exhibited at Skipton in 1864, when he carried off the

champion prize as the best ram in the yard. The Mount Fyans flock were by this time recognized by the best authorities as one of the leading flocks in the Western District of Victoria, the home of what was called the "Australian merino." The wool grown in this district has no superior in Australia—it is so soft, so lustrous, and of such high quality. It has another important qualification besides beauty—it is extremely profitable. In the *Australasian* of 25th May, 1867, it is stated that the average return per sheep of Mr. W. Cumming's previous clip amounted to 8s. per head, including lambs. In the same paper is an account of some specimens of wool from leading Victorian flocks which were sent to Mudgee by the late Mr. A. Lincolne, then secretary to the Port Phillip Farmers' Society. Of these samples some fleeces from 4-tooth Mount Fyans rams are described by the judges at Mudgee in the following terms:—"Infinitely better than any others and better topped. These are the only ones that our breeders here would look at or admit into their flocks."

For several years Mr. Cumming used rams bred in his own flock, and in 1874 he, in conjunction with his brother, the Hon. Thomas F. Cumming, then proprietor of Stony Point, purchased the celebrated ram "Sir Thomas" at the price of £714, up to that time and for several years after the highest price paid for a ram in Australia. This almost perfect specimen of a merino ram was bred by Mr. James Gibson, of Bellevue, Tasmania. He was six years old when sold to Messrs. Cumming, and Mr. Gibson calculated that he had realized £5,000 by the sale of "Sir Thomas's" male progeny, while he had all his female progeny still in his flock. Mr. D. Taylor, of St. Johnston,

who was the highest bidder but one for "Sir Thomas," told me some years after the sale that he would willingly give 1,000 guineas for another such ram as "Sir Thomas," which he considered the best merino ever bred in Australia.

"Sir Thomas" was as great a success in the hands of Messrs. W. and T. Cumming as he had been with Mr. J. Gibson. His progeny from the Mount Fyans ewes realized very high prices in the markets, and they were almost invincible in the show-yards. Among the earliest of his stock was "Sir Hercules," who, though not a great prize-taker himself, is sire of more prize-takers and high-priced rams than any other ram in Victoria. When six years old, and hard worked all his life, "Sir Hercules" cut 15 lbs. of wool, light in grease, and of a most beautiful quality. The Mount Fyans stud has produced many excellent rams that were not of "Sir Thomas" blood. Of these the most famous were "Longwool," who was used with so much success in the Stony Point flock, and "Champion," who distinguished himself at Skipton, in 1875, and afterwards at the Australian Sheep-breeders' Association's Show in Melbourne. His dam was a champion ewe at Skipton, whose lamb was weaned in order that she might be sent to the show. The Mount Fyans stud sheep have been regularly shown at Skipton, and afterwards at Melbourne, since 1864. The only years they were not exhibited were 1869, 1872, and 1884. They were shown only one year at Ballarat. Up till 1888 they gained ten champion prizes, twenty-one special prizes (most of them of considerable value), twenty-four first prizes, twenty-five second prizes, the grand champion prize of Australia in 1885, and in Otago,

New Zealand, they gained, in 1878, two first and two champion prizes. These honours have been won in competition with the finest sheep in Victoria.

The wool of the Mount Fyans sheep is of most beautiful quality, long in staple, with close and even serrations throughout the fibre, and of a beautiful lustre. It is the true wool of Australia Felix in its highest development, that can be produced in no other part of the world. The country about Mount Fyans is principally stony rises. The soil is rich and the pastures excellent. The estate has been greatly improved by plantations of trees, to break the force of the prevailing wind. The nearest railway station is Camperdown. The post town is Darlington.

THE CAMDEN STUD MERINOS.

The Property of the Hon. William Campbell.

The history of this ancient and pure-bred flock naturally possesses much interest for the owners of stud sheep in Victoria. There is scarcely a stud of any eminence in the colony but what is indebted to the Camden strain for much of its success. The flock has changed hands frequently, and has suffered from neglect, but it still preserves that beauty of wool which ever distinguished it. Throughout all the vicissitudes it has undergone, the various persons who have owned it were most careful to preserve it from any infusion of outside blood. The stud has been bred from within itself from the time Mr. Campbell obtained his first sheep from the

original Camden flock. It is, consequently, the most inbred stud in Australia. Mr. Campbell sent me the following sketch of the history of his flock:—

“MELBOURNE, *16th July, 1878.*

“DEAR SIR,—In compliance with your request, I now give an account of the thoroughbred Spanish merino flock which I brought overland from the Camden flock in 1846. At first I had the flock on terms, viz., one-third of the increase; but in about two years I purchased it entirely. It consisted of 150 ewes, and a sufficient number of rams, and travelled overland, mixed with a flock of about 5,000 crossbred merinos. I arrived in Port Phillip in April, 1846, and depastured the flock at Strathloddon for a few months, during which time I made several long expeditions in search of a run on the outskirts of the occupied country on the Lower Murray, Wakool, Avoca, and Wimmera; but found that no well-watered, healthy run could be had south of the Murray. I was, therefore, compelled to retrace my steps across the Murray, and take up a run on the Lower Wakool, which I had previously explored and applied for. The adjoining runholder, however, objected to my holding it; and, although it was seven miles distant from any of his stations, the commissioner refused to give me a license. I, however, had pre-occupation, and re-applied for it, with the determination of testing that right. Having ridden over 1,500 miles in a few months in search of a run, a great portion of that distance on jaded, half-starved horses, and half-starved myself, I was not disposed to surrender easily. Ultimately I disposed of my

crossbred flock, with the disputed right of run, and brought back the thoroughbred merinos to Victoria.

“The blacks at that time were dangerous, and had murdered Mr. Beveridge, and a shepherd of mine, and many others in that locality. This state of things increased the difficulty of keeping separate the pure from the crossbred lambs, and I was compelled to sacrifice the whole of the first crop of pure lambs by throwing them into the crossbred flock ; otherwise the pedigree of the flock would have been destroyed.

“In 1847 I purchased Tourall run, near Clunes, and placed the merinos on it, under my personal superintendence. The flocks were shepherded and folded at night, and the shepherd who followed the flock during the day-time ear-marked every pure lamb as it was dropped ; and at evening the lambs were firebranded, as an additional precaution against mixing with the common flock. I had a flock of crossbred ewes on that station, but never used any ram that was not thoroughbred in any of my flocks. While in occupation of Tourall, a flock of pure rams were sent to me from Camden, and I had no other addition to my flocks.

“In 1850, having exchanged Tourall for Strathloddon, now known as Campbell's Creek, the merinos were removed there, and were under my personal management. The discovery of gold, however, at Forest Creek in 1851, destroyed the run for pastoral purposes, and I was forced to remove the merinos to Mount Hope. In 1854, I left that station under the practical management of Mr. James M'Donald, who had been for many years employed at Camden in the management of merino sheep ; and I have no doubt about his having carried out my strict

instructions to keep the thoroughbred flock unmixed; and, as there were no other rams bred on that station, there was little risk of mixing the blood.

"In 1856, having left my family in Europe, I returned to Victoria, and, in 1857, disposed of Mount Hope to Messrs. Griffiths and Greene, who were made fully aware of the value of the merinos—about 1,000 in number. Owing to the climate of Mount Hope being extremely dry, and the pasture at that time very dusty, the quality of the fleece was impaired, and differed from what it was when grown on higher lands.

"Mr. Charles M'Knight purchased the merinos from Messrs. Griffiths and Greene, and removed them to his estate, Dunmore, in the Western District, where it was alleged they suffered from footrot and fluke. M'Knight was so particular about the purity of the flock that he only purchased the oldest portion of it, which reduced it in number to less than 600. After a year or two the flock was repurchased by Griffiths and Greene, and placed on their Glenmore estate.

"In 1873 I purchased it back from them, through their agents, Messrs. H. Cunningham and Co., under the full assurance that the flock had been kept pure and unmixed.

"The flock is now at Auchmore, on the Terrick Plains, and is in perfect health; but from the heat of the climate, the fleece, though good in itself, is not equal to what it would be if grown in a cooler climate. There are no other merino sheep on Auchmore, and consequently there is no risk of their mixing with mongrels; and nothing would induce me to introduce into the flock any other race, however good its qualities might be.

"With exception of a few ewes that were presented to

Mr. Peter Young by the Messrs. Macarthur, I know of no other thoroughbred ewes that were taken to Port Phillip. Mr. Young disposed of his ewes to Mr. William Hamilton, of the Sugarloaf station, who, in 1850, informed me that they were, through mismanagement, lost sight of in his common flocks. I never sold or parted with a thoroughbred ewe.

“It is gratifying to me to believe that I was the means of introducing into Victoria the pure Spanish merino, and (with Mr. Molesworth Greene and the late Mr. Charles McKnight) of preserving it.

“Between 1846 and 1857 I supplied rams to Messrs. Learmonth, Currie, Cuninghame, Willis and Swanson, Bell, and many other flockmasters, and I am pleased to hear that they generally attribute many of the excellent qualities of their superior stock to the Camden merino blood. In 1876 and 1877, I supplied Mr. Currie with rams for his celebrated stud flock, and he has just told me that they have given great satisfaction.

“It has been said that I do not show my sheep to advantage. I certainly do not force by artificial feeding. I am satisfied to keep them in good health on native grasses, and I take care that they are not mixed with any other breed.

“They have been bred ‘in and in’ for upwards of seventy years past, and have not degenerated in size or constitution since I first saw them in 1838. They are short in the leg, with large, strong body, active, and able to travel long distances. Their wool is longer, softer, and more free than the closer, shorter-fleeced Saxon merino.—Yours truly,

“W. CAMPBELL.

“MR. GEORGE A. BROWN, Melbourne.”

In March, 1880, Mr. Campbell, at the request of Sir William Macarthur, forwarded to Camden Park, New South Wales, a small number of sheep from this stud. In comparing these sheep with the old Camden flock, Sir William Macarthur writes:—"I can perceive little or no difference from animals of the same age and growth of fleece; certainly no deterioration."

THE BARUNAH PLAINS STUD MERINOS.

The Property of Messrs. G. Russell and Sons.

The country now called Barunah Plains was taken up as a squatting station by Mr. J. Hopkins, and was for years known as the Long Waterholes. It was purchased from the original settler by Mr. Thomas Austin, who placed on it merino sheep from a property owned by the Austin family in Tasmania named Torr Hill, in the Hamilton District. The Messrs. Austin were noted breeders of merino sheep, their flock being descended from the pure merinos bred by Mr. W. A. Bethune, of Dunrobin, Tasmania, who was one of the earliest importers of merino sheep in the island colony. Messrs. Austin also imported sheep from Germany, their names appearing in the books of Herr Gadegast as buyers of sheep many years ago. Messrs. T. Russell and Co. purchased the property in the year 1851, and at once commenced the improvement of the stock by culling the breeding flock and purchasing the best rams that were to be obtained. In 1853 the Barunah sheep were placed

under the management of Mr. Kininimonth. Twenty-five rams were purchased from Mr. J. L. Currie, of Larra, and some rams were obtained from Mr. John Bell, of Warrambeen, whose sheep at that time had no superior in Victoria. In 1860 a stud flock was formed with 150 ewes carefully selected from the breeding flock, which were put to a ram bred by Mr. J. L. Currie. About 1863 or '64 a Rambouillet ram was purchased, but he died after being used one season in the stud. The finest of his ram lambs were selected and used in the stud. When the progeny of these rams were 2-tooth, the person employed to class the sheep culled out those studs which showed the Rambouillet character of wool. Another Larra ram was then tried, but his stock did not prove satisfactory, and rams bred in the stud and Ercildoune rams were used. Mr. Kininimonth adopted the wise plan of carefully weighing and noting the character of fleece cut by all the stud rams, an exact record of which is kept, so that if a ram shows any tendency to degeneracy it is at once noticed. The Barunah sheep were rarely exhibited before 1879, and it was some time after that date that they distinguished themselves at the leading shows. Their great merits, however, brought them steadily to the front, and they are now in much favour with sheep-breeders in all parts of Australia. Of late they have had a considerable amount of success in the leading shows, having been awarded 8 champion, 36 first, and 16 second prizes, all taken in the grass-fed classes. At the Ballarat Show in 1885, with two exceptions, they were placed first in all the classes in which they were exhibited. This is the finest show of grass-fed sheep held in Victoria. At this show a 2-tooth ewe by "Quality"

carried off champion prize in the grass-fed classes and champion prize as best ewe in the show.

At the shearing of 1885 over twenty 2-tooth rams, mostly by "Quality," cut fleeces that averaged 12 lbs. 10½ ozs. of greasy wool. Two 2-tooth rams, exhibited at Ballarat, cut 14½ lbs. of greasy wool each. Since 1881 the Barunah Plains estate and flock have been under the management of Mr. James Russell, one of the proprietors.

The estate consists of 50,000 acres of freehold land, and is situated on a bare wind-swept plain about 30 miles from Geelong and 18 miles from the Leigh-road railway station. The property is in a dry zone, but is well watered by the Warrambine Creek, which runs through it. Bred on such an exposed spot, the sheep are naturally of a hardy, robust constitution. They are of good size, well shaped, and yield large fleeces of a most profitable description of wool—qualities that have gained them friends in every portion of Australia. This year a change took place in the proprietorship of the estate and stud, which now belong to Messrs. George Russell and Sons.

THE LANGI-KAL-KAL STUD FLOCK.

The Property of the Hon. Robert Simson.

This stud flock was formed by the present proprietor in 1862, with 135 ewes selected from 12,000 ewes, the breeding flock then on Langi-Kal-Kal. The history of this flock is as follows:—The country was taken up, under a squatting license, by Mr. James Donald and Mr. W. B. Hamilton in 1839 or 1840. Messrs. Donald and

Hamilton purchased their original flock of ewes from Mr. W. Kermode, of Mona Vale, Tasmania. The rams used were from the Circular Head Company, Tasmania, the Australian Agricultural Company, New South Wales, Saxon rams from the celebrated Gadegast stud flock, and three imported rams from the flock of Mr. Sturgeon, of Grays.

The Circular Head Company's flock was composed of the finest German merinos that could be procured; the Gadegast flock was esteemed one of the very finest in Germany. The Australian Agricultural Company's flock was descended from 600 pure merinos, which they imported in 1825; 300 of these ewes were from the flock of the Elector of Saxony, and the other 300 were French merinos. Mr. Sturgeon's stud flock was originally from the flock of Spanish merinos kept by George III. The descendants of these rams were in use as sires in the flocks of Langi-Kal-Kal when Mr. Simson bought the property in 1853, and were used by him for some years.

The ewes selected to form the stud flock were put to rams bred by Mr. Thomas Shaw and Messrs. T. and S. Learmonth. When in England, in 1862, Mr. Simson purchased three Rambouillet rams at the Royal Agricultural Society's Show, at Battersea, and used them in his stud flock for one year; but, not liking their progeny, the rams and their produce were rejected from the stud. In 1865, Mr. Simson imported 10 rams from the Steiger stud flock. Their progeny did not please, and they and their produce were rejected. In 1870, two rams, bred by Mr. Thomas Shaw, were used in the stud flock, and kept till superior rams were bred in the flock. The most notable of these was a ram that took the champion prize

at Skipton, in 1872. Since then Mr. Simson has bred rams which he considers much superior to the champion. In 1877, two rams, one bred by Mr. J. L. Currie, and one by Mr. T. F. Cumming, were purchased in Melbourne and used in the stud.

In 1882 a ram bred by Mr. James Gibson was purchased in Melbourne. He was by "Golden Tom," by "Sir Thomas 2nd," by "Sir Thomas." This ram's produce showed much irregularity, but many of them were of great excellence. The same year a ram by "Fortune," bred by Mr. J. D. Toosey, of Cressy, Tasmania, was purchased and used in the stud. His stock were of a very profitable description. At the annual sale of stud sheep in Melbourne in 1884, Mr. Simson purchased a ram named "Tasman," bred by Mr. W. H. Bennett, of Bloomfield, Tasmania. He was by "Magenta" from a St. Johnstone ewe. This ram was greatly admired by everyone who saw him. He was very densely woolled, and for quality, evenness, and covering, left nothing to be desired. So great was the desire to secure this fine animal, Mr. Simson had to pay 500 guineas for him. At the same sale he purchased a very taking ram, bred by Mr. Thomas Gibson, of Eskvale, by "Samson," a son of "Sir Thomas." When I visited the stud, in 1886, I was much struck by the way each ram had stamped his produce with his own good qualities and individuality. Mr. Tindale, the manager at Langi-Kal-Kal, who has had the management of the stud for many years, is greatly pleased with the nick of the Tasmanian rams and the stud ewes. The wool from this flock has always been noted for quality. In 1874 an exhibition bale of 100 4-tooth maiden ewes' fleeces (unskirted), hot water and spout-washed, weighed

426 lbs., and realized 3s. 1d. per lb. in the London market. In 1876 the highest price obtained was 2s. 11½d. per lb. In 1877 the highest price was 3s. 3½d. per lb., and in 1878 it reached 3s. 3½d. per lb. Mr. Simson has been only moderately successful at the leading shows, but his sheep always attract the notice of sheeep-breeders. At the Ballarat Show, 1889, a number of sheep by the Tasmanian rams were exhibited, and were fairly well placed in the prize list. The staple of their wool was not so long as that of most of the Western studs, but for covering, character, and high quality of wool I have seen nothing superior to them. Langi-Kal-Kal is situated about 28 miles from Ballarat, on the North-Western railway.

THE KIRKELLA STUD MERINOS.

The Property of Mr. Thomas Skene.

This is a flock of recent formation, and was formed in the following manner:—It was arranged between Messrs. Carter, of Glenisla, and Mr. Skene that the latter should have the privilege of selecting the finest ewes in the Glenisla flock to put to a Wanganella ram, and the progeny were to be divided equally between them. Messrs. Carter's sheep had for many years been bred to Ercildoune rams. They were famous for the high quality of their wool, but were somewhat light on the points. About twenty years ago Messrs. Carter purchased some imported Rambouillet rams, which they used in their flock with the view of improving the covering on their sheep. Mr. Mackersey, who used to assist Messrs. Carter

in classing their sheep, makes the following remarks on the progeny of these rams:—"In going through the young rams, the first they had from the imported rams, we found a small number of very excellent ones, showing high quality, length of staple, evenness, and density, and we determined that the sire of these young rams should be the stud sheep. He had left his mark so distinctly upon his progeny that we had no trouble in selecting him from the others. The cross nicked splendidly, and I never saw any flock improve so rapidly as they did. Great care was taken every year in the classing, and especial attention was paid to length of staple combined with evenness and density." The type of sheep produced by the union of the Glenisla ewes and Rambouillet rams was preserved, and though very profitable sheep, they had not sufficiently fine quality of wool to take prizes in the show-yards. The sire selected by Mr. Skene to put to the picked Glenisla ewes was a Wanganella ram by "Conqueror" (the winner of the first £150 challenge cup at Ballarat). This ram cut 15 lbs. 5 ozs. of greasy wool as a 2-tooth. As a 4-tooth, after being with the ewes, and 96 lambs marked to him, he cut 16 lbs. As a 6-tooth, when he had 106 lambs marked to him, his fleece weighed a little over 16 lbs. In 1887 he had 150 lambs marked to him, and Mr. Skene says:—"Notwithstanding the drought he is in excellent condition. He seems to have a constitution like iron." The Glenisla ewes selected to put to the Wanganella ram numbered 150 head, from 4-tooth to broken-mouthed, and averaged $10\frac{1}{2}$ lbs. of greasy wool, light in condition. The half Wanganella 2-tooth rams averaged 10 lbs. 8 ozs., the highest being 13 lbs., and the 2-tooth ewes averaged

8 lbs. 12 ozs., the highest being 12 lbs. The season was one of protracted drought, and the sheep had no artificial feeding. This flock is called the Rambouillet stud, as being more closely bred to the Rambouillet strain on both sides than any other flock in Australia.

In addition to the stud described, Mr. Skene has formed another with 10 4-tooth ewes and 22 2-tooth ewes bought at the sale of the Borriyalloak stud in 1885. These ewes were by a Wanganella ram named "Wool King." Though rising six years of age at the time of the sale, "Wool King" realized 230 guineas. The dam of the ewes purchased at the sale were extra studs in the Borriyalloak flock.

TASMANIA.

THE SCONE STUD MERINOS.

The Property of Messrs. W. Gibson and Son.

THIS famous flock was formed in 1854, when Mr. W. Gibson purchased from Mr. J. Youl, of Symmon's Plains, the whole of his pure merino lambs, 300 in all. Mr. Youl's sheep were originally from the flock bred by Mr. James Cox, of Clarendon, who obtained a few ewes and one ram of the Camden sheep, which Captain Macarthur exchanged with Lieutenant-General Sorell, Governor of Tasmania, for a certain area of land in the island colony. Governor Sorell made the exchange with the view of improving the sheep in Tasmania, and distributed the

Camden sheep among the leading sheep-breeders. Mr. Cox used pure Saxon rams, imported by Messrs. Gilles and Horne, and afterwards used rams from the flock of pure merinos imported to Tasmania by Mr. Thomas Henty. In a letter to Mr. W. Gibson, Mr. Youl states that he used a ram from Mr. Henty's flock with the few ewes he obtained from Clarendon, and followed with a couple of imported German rams; after which he again returned to Mr. Henty's flock for a sire. About 1852 he used two imported Saxon rams, and the young ewes purchased by Mr. Gibson were by them. Mr. Youl attributed much of the excellence of his sheep to the influence of Mr. Henty's rams. With the ewes Mr. Gibson purchased from Mr. Youl, rams bred by the late Mr. David Taylor, of Winton, were used, and afterwards a ram bred by Mr. W. Archer, of Brickendon, was purchased. This was a densely woolled sheep, and cut a very heavy fleece for the time. As a 2-tooth his fleece weighed 13 lbs. in the grease; and at 3 years old his fleece, hot water washed, weighed 9 lbs. He was used in the stud for four years, and he was followed by a ram bred by Mr. James Stewart, by an imported Saxon ram from a Mona Vale ewe. His wool was of most beautiful quality, dense and even. About the same time a ram bred by Mr. James Gibson, of Bellevue, was added to the stud. Following these sires were three rams bred in the stud. As 2-tooths they gained second prize at the Midland Agricultural Society's Show in 1867, and the next year they were awarded first prize. As 4-tooths they cut $7\frac{1}{2}$ lbs., 8 lbs., and $8\frac{1}{2}$ lbs. respectively of hot water washed wool. They were sold at Skipton in 1869, when they realized high prices for the time. An

imported Negrette ram, bred by Herman Von Mathusius, of Hunderberg, was then put to a few select ewes, and some excellent sheep were the result. Two sires of his get were used in the stud.

In 1868 Mr. W. Gibson, jun., paid a visit to Europe, and inspected all the leading stud flocks in England and Germany. He purchased four rams from Mr. Sturgeon and two rams from Herr Gadegast. The rams bought from Herr Gadegast were by a celebrated ram named "The Owl," for which Mr. Gibson offered a very high price; but the owner refused to part with him. The Gadegast rams did good service in the stud by keeping up the density and quality of the wool. The Sturgeon rams were large-framed, heavily-woolled sheep, one of which cut 20 lbs. of greasy wool for three years consecutively. In 1872 a Bellevue ram, by "Sir Thomas," was used in the stud, and a couple of Scone ewes were sent to "Sir Thomas." One of these ewes, a granddaughter of "The Owl," produced the well-known sire "The Duke," who won first prizes at the Northern Agricultural Society as 2 and 4-tooth. Since 1870 all the rams used in the stud, with the exception of the "Sir Thomas" ram, have been bred at Scone. Of these the most notable have been "Royal Prince," sold to Mr. D. F. Gibb, New South Wales, when under 14 months' old, for 500 guineas; "Royal Duke," who, at 4-tooth, cut 17 lbs. of clean, bright wool; "Grand Prince," sold to Mr. C. Cooper, New South Wales, for 490 guineas. This ram cut 16 lbs. 5 ozs. without clippings, and that year 177 lambs were marked to him; and "Prince 2nd," sold to Mr. N. C. White, of Havilah, for 520 guineas. When I visited Scone, in 1883, one of the finest rams in the

stud was "Prince 3rd." He was a large-framed and heavily-fleeced sheep, with high quality of wool, even and dense. Messrs. Gibson refused an offer of 750 guineas for this fine ram. I was much taken with "Royal Duke 3rd," whose fleece, at 4-tooth, weighed 17 lbs. This fine ram was afterwards purchased by Mr. A. L. Faithful for 325 guineas. The Scone stud sheep are favourites with sheep-breeders in every part of Australia. I have met with them over a wide range in the Australian colonies, and found that they always give satisfaction. The Scone sheep have been very successful at various wool and sheep shows, but their popularity rests on firmer grounds than prize-taking. In Sydney, 1875, the first prize for six unskirted fleeces in the grease was taken by Scone wool from ewes that had each reared a lamb that season. The average was $11\frac{1}{2}$ lbs.

At the same show six rams' fleeces, selected for quality of wool, averaged 10 lbs. 1 oz. A first prize was awarded to six ewes' fleeces, unskirted and hot water washed, the average weight being 5 lbs.; and a first prize was awarded to six ewe hoggets' fleeces, unskirted and hot water washed, average weight $4\frac{5}{8}$ lbs. At Messrs. Hastings Cuningham and Co.'s wool exhibition, 1870, Messrs. Gibson and Son took the highest position among the exhibitors. They gained the gold cup for fifty most valuable merino fleeces, washed and unskirted. The weight of fleece was 5 lbs. $0\frac{1}{2}$ ozs. The judges' value was 2s. 7d. per lb., giving a value per fleece of 13s. They also gained the gold cup for bale of merino fleece in grease of the highest value per lb. The bale contained 92 fleeces, weighed $303\frac{1}{4}$ lbs., and was valued at 1s. $7\frac{1}{2}$ d. per lb. At the Sydney International Exhibition, 1880,

Messrs. W. Gibson and Son were awarded two champion gold medals, four first prize silver medals, and one second-class medal. The weight of wool cut by the Scone sheep may not appear large when compared with the fleeces of some half-American and strong combing woolled rams in other colonies; but they are very heavy when the value of the wool is considered. The Scone stud sheep have realized very high averages at the great Sydney and Melbourne stud sheep sales for many years past.

About four years ago, Messrs. W. Gibson and Son purchased at Sydney a 4-tooth Californian ram, named "Squatter," for the sum of 450 guineas, and 3 Californian ewes at 104, 105, and 152 guineas respectively. The cross has been tried between the American and Scone merinos, and the result has been so far satisfactory to Messrs. Gibson and Son. The young sheep by the American ram have been admired by some experienced Australian sheep-farmers, and they have been in good demand at the annual sales of stud sheep. The American rams are being tried as an experiment, they and their produce being kept apart from the stud flock.

At the Melbourne sales this year a ram of quarter Vermont blood, named "Prince Albert 2nd," realized 700 guineas, the purchasers being Messrs. Peterson and Sargood, of Jerilderie; and a ram of Scone blood, "No. 3 Royal Duke," by "Royal Duke 5th," realized 525 guineas, the purchaser being the Hon. S. Fraser, of Nyang, New South Wales. Scone is within a mile of the town of Perth.

THE BEAUFONT AND WETMORE STUDS.

The Property of Mr. Thomas Parramore, of Beaufront, and Mr. George Parramore, of Wetmore.

I have joined these well-known studs under one heading, because (though separately owned by the brothers Parramore) they are in their origin and subsequent breeding virtually one flock. In the year 1825 Mr. George Parramore (the grandfather of the present proprietors) commenced breeding pure merinos with 3 ewes and 1 ram selected from the sheep imported from Europe by Messrs. Gilles and Horne in 1823. The originals were from the flock of the Elector of Saxony, one of the most famous flocks at that time in Europe. In the *Australasian* of 9th May, 1877, there appeared a short sketch of the origin of this flock, and soon after Mr. L. W. Gilles wrote to Mr. T. Parramore, confirming the statement as to the origin of the sheep imported by his firm nearly half a century before. In 1829 an addition was made to the flock of a Saxon ram imported by Captain Stephens, and 2 Saxon ewes imported by Mr. W. Forlonge, whose sheep figure in the pedigrees of so many of the old Tasmanian merino studs. Rams bred by the Van Diemen's Land Company were then used in the stud, and they were followed by a ram bred by Mr. Forlonge. The wool grown in the Parramore stud was up to this time of the true Saxon character, short in staple, dense, and remarkably fine.

In 1836, the late Mr. Thomas Parramore (father of the present proprietors) paid a visit to the old country, and while there took much pains to gain from the

leading manufacturers of merino wool some idea of the description of wool best suited to their requirements. Some of his rams' fleeces happening to be in London at the time, he showed them to the manufacturers, who selected one as the exact type of wool they wanted. This happened to be the fleece of a polled ram that had not been used in the stud, because his wool, though longer in staple than that of the others, was of a more robust character than was fancied in those days. Mr. Parramore at once wrote to his manager to use this ram with their best ewes, and his instructions were duly carried out. "Mufti," as the ram was called, produced some splendid stock and completely altered the character of the stud. Though considered strong in the wool in those days, "Mufti" was not by any means a coarse sheep; indeed, Captain Horton, a great advocate for high quality of wool, pronounced him the best ram he had seen. The long staple thus obtained was cultivated, and now the Beaufront and Wetmore sheep are among the longest woolled merinos in Australia. An important addition was made to the stud in 1869, in the imported ram "No. 170," bred by Herr Steiger, of Leutewitz, Germany. (This ram afterwards became the property of Mr. D. Taylor, of St. Johnston.) Another grand ram used in this stud was "Sir Robert," bred by Mr. R. Q. Kermode, of Mona Vale. The value of this sheep may be gathered from the fact that Mr. D. Taylor paid 200 guineas for him after he had been five years in the Parramore flock. The most noted of the sires used in the stud of late have been "Young Fortune," by "Fortune" (bred by Mr. J. D. Toosey, of Cressy) from a ewe "No. 20." He is a very heavily fleeced ram, and

as a 2-tooth cut 15 lbs. of unwashed wool of eleven months' growth. As a 4-tooth his fleece weighed 19½ lbs. His dam, "No. 20," cut 9 lbs. 10 ozs. of unwashed wool after rearing a lamb. Another favourite sire, and the best used in the stud for many years past, is "Elector," bred by Mr. G. Parramore, by "Erl King," by "Sir Robert." He and his sons have produced some admirable stock. Instances of sheep cutting very heavy fleeces when they have reached an advanced age are frequently met with in the records of this flock. The most remarkable one occurred in 1882, when a very old ewe cut a fleece weighing 13 lbs. 12 ozs. The stud flock was divided by Messrs. T. and G. Parramore some years after the death of their father; but, though separately owned, they are bred in the same manner. The proprietors have used, and are still using, the same sires.

Beaufront is situated on some low hills, lightly grassed, but very healthy for sheep-grazing. It has a large frontage to the river Macquarie, and in time Mr. T. Parramore expects to be able to irrigate about 1,000 acres. It extends back several miles into the eastern tier, where the country is very rough and poor. Wetmore adjoins Beaufront, and the homestead, which is situated close to the Macquarie River, is surrounded by irrigated meadows. Both properties are situated near the village of Ross, on the Tasmanian main line railway. These flocks are among the very oldest in Australia, and have been in the possession of one family for over 60 years. In all that time no ram whose breeding was not unexceptionable, and whose form and fleece were not of the highest type, has been used in the stud. The sheep are of large frame for Tasmania, have heavy fleeces of very

attractive wool ; the staple is very long and the fibre is fine without being delicate. The rams from these studs have great prepotent power, and are held in high estimation by the most skilful flockmasters in Australia. The highest price realized by a sheep from these studs was 510 guineas, paid for "Flinders," by "Young Fortune." He was purchased at Messrs. Powers, Rutherford and Co.'s sale, in Melbourne, by Mr. M. O'Shanassy, of Moira.

THE BELLEVUE STUD MERINOS.

The Property of Mr. James Gibson.

There are few flockmasters in the Australian colonies who have not heard of the famous Bellevue stud flock. Sires from this flock have been used far and wide throughout the Australian colonies. There is scarcely any locality, no matter how remote, where fine-woolled sheep are bred but the blood of this flock is represented. The stud owes its well-deserved celebrity to the skill and judgment of the owner, exercised on stock of the highest quality and breeding.

The Bellevue stud was formed in the year 1863 with a selection of ewes from the flock of the late Mr. David Taylor, of Winton. To these ewes were put three rams bred by the late Mr. Thos. Parramore, of Beaufront. One of these rams was a celebrated champion prize taker, who became the sire of "King Billy," a ram who was considered the best of his day. The Beaufront rams were used for some years, and then a couple of rams bred

by Mr. James Stewart, of Symmon's Plains, were introduced into the stud. Mr. Stewart's stud flock was one of the highest bred merino flocks in the island. The originals were imported by him from England, and were from the pure Spanish merino flock called the Hampton Court flock. The selection was made by Mr. James A. Youl, an old colonist, and an excellent judge of merino sheep. With the exception of the two sheep bred by Mr. Stewart, no rams but those bred in the flock have been used since the stud was formed, save that occasionally Mr. Gibson would obtain the use of a ram from Mr. David Taylor.

The finest ram ever bred in this stud was the famous "Sir Thomas," whose name is known to sheep-breeders throughout Australia. At six years old this ram was sold by auction in Melbourne, in 1874, and, after the most spirited bidding, he was knocked down to Mr. William Cumming, of Mount Fyans, and Mr. Thomas Cumming, of Stony Point (in conjunction), for 680 guineas—at that time, and for several years after, the highest price ever paid for a ram in Australia. He was exhibited several times, and always took a high position in the prize list. Another very fine ram bred in the stud was "Golden Tom," by "Sir Thomas 2nd." This ram was purchased privately, in 1882, by Mr. McKellar, for the Hon. R. Campbell, of Otakeike, Oamaru, New Zealand, for 500 guineas. He was then full-mouthed, and had just served the season. "Golden Tom's" stock have turned out remarkably well.

"Sir Thomas 2nd," by "Sir Thomas," after being used in the stud for several years, was sold in Sydney by auction, when seven years old, and purchased by Mr.

Stephen White, of Merrybindinyah, N.S.W., for 604 guineas. This ram succeeded admirably in Mr. White's stud, which was composed of sheep entirely of Bellevue blood. "Sir Thomas 2nd" got some admirable stock for Mr. White. I saw the old ram at Merrybindinyah in 1885, and, though badly cared for, his fleece was remarkably good. Old age had shortened the staple, but it was as dense as ever and very even. Another fine ram bred at Bellevue was "Sir James," by "Sir Thomas," who has produced so many fine sheep in the Jellalabad flock. "Merino," "Woolly Tom," and "Tasman," all by "Sir Thomas," have helped to keep up the fame of the Bellevue stud. I visited Bellevue in 1883, when I had an opportunity of examining the sheep. The wool is of the highest quality and remarkably even. The finest of the young rams at that time were by "Golden Tom." In my rambles over the Australian colonies I have frequently met with sheep from the stud, and wherever high quality of wool is prized, there the Bellevue rams are held in great favour.

The Bellevue sheep cut fleeces of good weight. The quality is admirable; it is even and well put on. Of the value of their wool the following is a good illustration:—In 1882 the fleece wool was sold in Melbourne at 1s. 5d. per lb. in the grease. The purchasers, Messrs. Dalgety, Blackwood and Co., sent it to London, where it realized 1s. 11d. per lb. This was pronounced by experts to be the best lot of merino wool ever sent to the London market from Australia. In 1883 all the fleece wool from the flock, including 3,000 breeding ewes and old ewes, was sold in Melbourne for 1s. 6d. per lb. in the grease.

The Bellevue sheep and wool have taken many honourable prizes. When in his prime "Sir Thomas" was sent to Sydney, and there carried off the champion prize. At the Sydney Intercolonial Exhibition four Bellevue sheep were shown, one of which, a 4-tooth, by "Eclipse," carried off first prize and champion gold medal; another 4-tooth ram took second prize, while another carried off first prize in the all-aged class. At the Melbourne International Exhibition Mr. Gibson received first prize for the most valuable bale of unwashed merino wool. Many other prizes have been taken by the Bellevue sheep and their wool.

The estate is situated on the South Esk River, about four miles from the Epping Forest station, on the main line railway.

THE FAIRFIELD STUD MERINOS.

The Property of Mr. W. H. Gibson.

This stud was formed by the present proprietor, in 1868, with a small but very choice selection of ewes from the flock of Mr. David Taylor, to which were added ewes from the Bellevue stud. Since that time Mr. Gibson has used no rams but those of his own breeding, save that occasionally he would send a few ewes to a St. Johnston or a Bellevue ram. Mr. Gibson undertook to improve his flock by careful selection, and he had many qualifications for the task. He had long experience in sheep-breeding, a thorough knowledge of the points of a good merino, and, what is better than all, he was an enthusiast in fine-wool sheep husbandry. With careful

and skilful selection of the breeders, and a rigorous elimination of all sheep showing inferiority, the Fairfield stud has steadily advanced in the estimation of stock-owners throughout the Australian colonies. While resembling the sheep in the two celebrated studs from which they are descended, the Fairfield merinos have yet an individuality of their own, the result of the system of breeding adopted by the proprietor at the outset, and since then pursued with matured judgment and constant care. Owing to the character of the climate in which they are reared, the Fairfield sheep are essentially hardy, and this is not their least recommendation in the eyes of Australian sheep-farmers.

Since the formation of the stud Mr. Gibson has adopted the plan of keeping up a family of densely woolled sheep, which bear a strong resemblance to the old-fashioned German merinos, with this difference, that the wool, instead of being loaded with heavy yellow yolk, is bright and clean. The use of the now famous ram "Sanscrit" was obtained for a few ewes, and the result was highly satisfactory. When I visited Fairfield I was greatly impressed by the young stock by this ram. They were very densely clad with wool of a quality that left nothing to be desired. The Fairfield sheep carry their weight of fleece into a good old age. I saw one stud ewe, then 14 years old, who looked as healthy and active as any ewe in the flock. She had produced many excellent sheep, all of which had realized high prices. The previous year a 2-tooth ram from her sold at auction for 116 guineas, and she looked as if she would produce lambs for several years to come. The lustre quality of wool noticed in the St. Johnston flock is very

pronounced in some members of the Fairfield stud. The fleece of a ram named "Whitewool" is a most beautiful specimen of this description of wool. It is as lustrous as silk, and so white and free from tip that one can scarcely realize that it has not been washed in hot water. "Whitewool" carried off the champion prize at Longford in 1884, and, though seven years old when I saw him, still carried an excellent fleece. The Fairfield sheep are held in much favour; a very successful sale was made at Lyttelton, New Zealand, in 1878, when ten rams realized 1,262½ guineas, and ten stud ewes sold for 505 guineas. The Hon. Wm. Robinson, of Cheviot Hills, Canterbury, New Zealand, bought six of the highest priced rams and all the ewes. The highest priced ram sold out of this stud was at Melbourne, in 1884, when "Woolly Boy 2nd," 4-tooth, was bought by Mr. Wm. Robertson, of May Hall, South Australia, for 500 guineas. In May, 1885, Mr. P. Sinclair, of Yabba, New South Wales, purchased from Mr. W. H. Gibson the stud ram "Density," six years old, and five stud ewes, rising 2-tooth, for £1,250. "Density" was by a son of "Sanscrit," and had been extensively used in the Fairfield stud.

In November, 1885, Mr. Gibson, in conjunction with Mr. H. Gatenby, of Rhodes, purchased four rams and eight ewes of pure Vermont blood, which have been tried with some stud ewes selected for the purpose. Two of the rams, named "Californian Tom" and "Sacramento," cut fleeces weighing respectively 32 lbs. and 23¼ lbs. in the grease. The wool from these sheep is of much higher quality than that of any other American sheep I have seen. "Californian Tom" has a good staple, but a very heavy tip. "Sacramento's" wool

is shorter in staple, with less tip. It is of a beautiful quality, with close serrations, and very dense. These sheep are to be kept distinctly separate from the Fairfield stud. Even if the cross proves to be a success, Mr. Gibson intends keeping the two studs separate. At the Midland Agricultural Show this year Mr. W. H. Gibson took the champion prize with a 2-tooth ram by "The Vagabond," by "Reliance," by "Sanserit," by "Sir Robert." "The Vagabond's" dam was by "Sacramento," an imported American ram, from a Fairfield stud ewe. The Fairfield estate is about three miles from the Epping station, on the main line railway.

THE BLOOMFIELD STUD MERINOS.

The Property of Mr. W. H. Bennett.

This flock was formed by Mr. Bennett in 1877, with 110 stud ewes purchased from Mr. D. Taylor, of St. Johnston. The sheep were kept for some time on the northern side of the island, and in 1880 were removed to Bloomfield. Mr. Bennett is a great admirer of high quality of wool, believing that in its quality lies the special advantage of Australian wool. He prefers the St. Johnston type of sheep, and his stud is composed entirely of that strain. The culling has always been very close in this flock. When I visited Bloomfield, six years after the stud was formed, it then numbered only 300 head, and during that time very few sheep had been sold. Some famous rams have been used in the stud, the most notable being "Magenta," bred by Mr. D. Taylor, by "Premier," a son of "Sir Thomas." "Magenta" took first prize in his

class, as a 2-tooth, at the Midland Show, in 1876; and next year he carried off the champion prize. When a 4-tooth, Mr. Taylor sent him to the Melbourne sales for exhibition. At that time I thought him the handsomest ram I ever saw. His fleece was remarkably beautiful, of very high quality, dense and even. "Magenta" was the subject of much discussion in the columns of the *Australasian*. This fleece was described as gummy, and he was said to have no constitution. I saw this ram when nearly nine years of age, at Bloomfield, and though the staple of his wool was short, the quality and density were as good as ever. A few months after he was sold in Sydney for 205 guineas, the purchaser being a Tasmanian sheep-breeder. At the same sale some ewes in lamb to "Magenta" realized 25 guineas each. A still more famous ram used by Mr. Bennett was "Sanscrit," one of the best stud sires of his day in Tasmania. A favourite ram in this stud was a son of "Sir Thomas," from a St. Johnston ewe. He was ten years old when I saw him, and his fleece, for length of staple, weight, and quality of wool, was remarkable in so old a sheep. He carried his years well, and was quite as active as any of the young sheep. One of the stud ewes I saw showed very high quality of wool, combined with heavy weight of fleece. As a 2-tooth she gained Mr. J. Clarke's cup at Hobart, and that year her fleece weighed 14 lbs. Next year she gained the champion prize at Hobart, and her fleece weighed 16½ lbs. As a 6-tooth she cut 13 lbs. of clear bright wool of eleven months' growth and reared a lamb. Her dam, at the time of my visit, was still in the stud. Her first lamb was the champion prize taker, and every year since she had borne twins. A curious instance

of the wool-bearing qualities of the Bloomfield sheep was afforded in a very small ewe that, if killed and dressed, would scarcely weigh 40 lbs.; and yet, as a 2-tooth, she yielded a fleece weighing 15 lbs. of greasy wool. I have never met with a sheep that would give as large a proportion of wool to live weight as this little ewe. For several years after he had established his stud, Mr. Bennett's name did not appear as a seller of stud rams. He preferred waiting till he had thoroughly established a flock of the type he desired before he offered any sheep for sale at Sydney or Melbourne. At a sale held by Powers, Rutherford and Co., in Melbourne, August, 1884, a ram by "Magenta" from a "Sanscrit" ewe was bought by the Hon. Robert Simson, of Langi-Kal-Kal, for 500 guineas. He was a fair-sized ram, with medium length of staple, and the wool was heavily packed on him all over. At the same sale a ram by "Sanscrit" from the Hobart champion ewe was bought by Mr. Charles Ayrey, of Warranooke, for over 300 guineas; and ten stud ewes realized from 20 to 55 guineas. Bloomfield is situated about three miles from the town of Ross.

THE CHISWICK STUD MERINOS.

The Property of Mr. George W. Keach.

Mr. Keach formed his stud flock in 1870 with 50 ewes, the best of a lot of sheep purchased from Mr. Arthur Leake, of Ashby. These sheep were from Mr. Leake's pure flock, the originals of which were purchased by his father from the Elector of Saxony in 1823, and

imported by him to Tasmania. Mr. Leake afterwards added to his flock some pure sheep bred by Captain Horton. Mr. Keach at first used rams bred by Mr. A. Leake, which were followed by some Mona Vale rams. Since then no rams have been used in the stud but those bred in the flock and some purchased from Mr. D. Taylor. Two of these—one by “Snowball,” and one by “Sir Robert”—did excellent service in the stud. The Chiswick sheep present a different appearance to the general run of the Tasmanian merinos; they appear to be of larger frame, stand higher on the leg, and in several respects resemble the merinos bred in Victoria. They are of very robust constitution, which is due to Mr. Keach never breeding from very young sheep. Their wool is uniform in character and quality, of long staple, and dense. The stud is divided into two parts, and contains about 800 breeding ewes in all. In 1879 the ewes in No. 1 flock yielded $7\frac{1}{2}$ lbs. of greasy wool, an excellent return considering the number of ewes that had reared lambs and the value of the wool. The same year the 2-tooth rams yielded an average of 10 lbs. of unwashed wool. In 1883 all the 2-tooths in the stud yielded an average of 9 lbs. of greasy wool. The principal prizes taken by the Chiswick wool are—a silver medal at Brisbane, January, 1882; six fleeces at the Sydney Exhibition, highly commended. These fleeces, though very light in grease, gave an average of 9 lbs. 6 ozs. At the wool exhibition held by Messrs. Hastings Cunningham and Co., in Melbourne, February, 1879, a bale of Mr. Keach's wool was bracketed with a bale exhibited by Sir Samuel Wilson, of Ercildoune, for third prize. Both lots were valued at 1s. 6d. per lb. The judges

remarked that they considered the Chiswick and Ercildoune wools of equal value, but specially commended the Chiswick wool for its fine quality. At the Melbourne International Exhibition, 1880, in the class for a bale of wool not weighing less than 300 lbs., from not more than 100 sheep, skirted, of the highest value per lb., Mr. Keach's exhibit was awarded second order of merit. Of this exhibit the judges remarked:—"High quality, very bright, free from faults." The wool from this flock realizes high prices in the London market. In 1879, the fleece wool of the whole flock realized 1s. 6½d. per lb. in the grease. Twenty bales realized the high price of 1s. 9½d. per lb. The sheep from this stud have improved greatly during the last few years. The rams sent in to the annual sale this year at Melbourne were of remarkable excellence. The Chiswick estate is situated about half a mile from the town of Ross.

THE BENGEO STUD MERINOS.

The Property of the Hon. F. W. Grubb.

This stud was formed in 1885, with five ewes bred by Mr. D. Taylor, and purchased by Mr. Grubb at the annual sale of stud sheep in Sydney, at the average price of £49 7s. 6d. At the same sale he purchased twelve ewes of St. Johnston blood, at an average cost of £15 10s. These ewes were sired by "Sanscrit," "Little Wonder," "Magenta," and "Goldfinder." In 1886 Mr. Grubb purchased sixteen ewes bred in the same way, at an average of £12, and the year following eighteen ewes of

the same strain of blood were added to the stud, their price being £13 per head. In 1889 an addition of 115 St. Johnston and Bellevue ewes was made to the stud. With these ewes some high-class rams have been used—namely, “Sir Douglas” and “Young Billy,” both bred by Mr. D. Taylor; “Viceroy,” a grandson of “Golden Tom,” by “Sir Thomas II,” by “Old Sir Thomas.” This ram was bred by Mr. James Gibson, and was bought by Mr. Grubb when 4 years old for 165 guineas. In 1887 the stud ram “Zulu,” by “Commotion” from a St. Johnston ewe, was purchased from Mr. Thomas Gibson, Eskvale, at 150 guineas, and he is still in the stud. In 1888 Mr. Grubb purchased a ram named “Stockings,” by “Ringwood,” by grandson of “Golden Tom,” bred by Mr. W. Gatenby, Woodbourne, the price being 300 guineas. This sheep is still in the stud.

Mr. F. W. Grubb and his brother, Mr. C. B. Grubb, of Strathroy, wishing to obtain a change of blood, decided, after seeing some fleeces shown by Herr Otto Steiger at the Melbourne Centennial Exhibition, 1888-9, to obtain some of the sheep that bore the fleeces exhibited. By telegram they purchased two of the best rams in Herr Steiger's stud—namely, No. 245³, “Lord Steiger,” and No. 25, “Sir Otto.” The fleeces of these rams shown in Melbourne weighed 21½ lbs. each for 285 days' growth. At the same time they bought 12 of Herr Steiger's picked stud ewes. These sheep arrived safely in Tasmania early in January, 1889. The imported sires have been freely used in the Bengoe and Strathroy studs this season. Herr Steiger, in a letter to Mr. Grubb, says:—“I have selected these sheep with the greatest care. They are some of my best animals. . . . I could

not supply any better than those sent." Since these sheep were bought, Mr. F. W. Grubb took a trip to Europe, and visited Herr Steiger's stud farm at Leutewitz. After going through the stud flock, he was quite satisfied that the sheep sent to Tasmania were equal to any Herr Steiger possessed. The imported sheep are of large size for merinos—"Lord Steiger" weighed before shipment 275 lbs., and "Sir Otto's" weight was 250 lbs. I saw the fleeces of these rams in the Centennial Exhibition, and admired them greatly. The wool was not quite so fine as some of the best Victorian flocks, but it was of a most attractive and profitable description, fairly long in staple, dense, remarkably even, and of excellent character. It was just the description of wool that an experienced sheep-farmer would like to see on a stud sire. An article I wrote on this wool, which appeared in the *Australasian*, attracted much attention, and had not Messrs. Grubb purchased the sheep promptly, by telegram, they would have had plenty of competition. These sheep have heavy folds of skin on the neck, but otherwise their bodies are smooth. In a pamphlet circulated in the Exhibition, Herr Steiger gives the following history of his stud flock:—"The full blood merino flock of Leutewitz descends from the thoroughbred merino flock of the Prince of Reuss, at Kliphausen, Saxony. The latter was composed of that stock of sheep from the best breeds of Spain which the Elector Friedrich August of Saxony had been presented with by King Charles II. of Spain, in July, 1765. . . . The proprietor of Kliphausen, Lord Fletscher, Privy Councillor, was the first who improved his flock by 4 rams taken from those

imported in 1765, and by a stock of 2 rams and 24 ewes, a present of the Elector of Saxony, from the stock of 1778. After the death of Lord Fletscher and of his daughter, the Countess of Reuss, His Serene Highness the Prince of Reuss took possession of Kliphausen, by whom this stock of sheep was carefully bred, and became exceedingly famous. . . . My great grandfather, Christian Steiger, bought his ewes and rams at Kliphausen, in the year 1805-6, and attaching a high value to the breeding of full-blood merino sheep, raised the flock till 1819. From this time my grandfather, Christian Adolph Steiger, received the flock, who was ranked with the most celebrated sheep-farmers of Germany. From 1834 to 1875, my father, Adolph Steiger, a perfect connoisseur of the history of sheep-breeding, bred the flock of Leutewitz. Then I became proprietor of Leutewitz, and endeavoured to improve the flock on the same principles."

The Bengoe stud now consists of 250 ewes. They are carefully culled every year, and are selected so as to mate with rams suited to them. The lambs are all marked in the ear as they are dropped, with the number of the dam and name of sire on each label, and duly entered in the stud book. By these means the pedigree of each sheep can be clearly traced.

THE STRATHROY MERINOS.

The Property of Mr. Chas. B. Grubb.

This stud was formed in 1880, when Mr. Grubb purchased 170 ewes from Messrs. W. Gibson and Sons,

of Scone. Of these 100 of the best were selected to form the breeding stud, and from time to time since small lots of choice ewes from the Scone flock have been added to the stud. The rams used were also drawn from the Scone stud. In the year 1885 a ram named "Elector," a grandson of the well-known sire "Sir Robert," was hired from Mr. G. Parramore, of Wetmore, and the same year 130 ewes were purchased from Mr. Thos. Parramore, of Beaufront, and Mr. G. Parramore. In 1888 another draft of 100 ewes was purchased from the gentleman named. The nick between the Scone and Parramore sheep has proved a most successful one, the sheep being of good size and well woolled.

Near the end of 1888 Mr. Grubb, in conjunction with his brother, Mr. F. W. Grubb, of Bengoe, purchased from Herr Otto Steiger, of Leutewitz, near Meissen, two rams and twelve ewes, which in due time arrived safely in Tasmania. An account of these sheep will be found in the record of the Bengoe stud. The imported ewes have been put to the Steiger rams. One ewe was in lamb on leaving Germany, and since her arrival in Tasmania she has given birth to a very fine ram lamb. The Strathroy wool realizes a good price in the London market, and has realized as high as 1s. 5d. per lb. for greasy wool. The infusion of fresh blood in the Bengoe and Strathroy flocks is expected to have a very beneficial effect. The estate is situated about six miles from Launceston, on the Hobart road.

THE GLASSLOUGH STUD MERINOS.

The Property of Mr. Walter A. Gatenby.

Mr. W. A. Gatenby commenced breeding stud merinos in 1882 with eleven yearling ewes purchased from Mr. David Taylor at £25 per head, selected from the first stud flock; ten very old ewes at £5 per head, and ten ewes given to Mr. Gatenby by Mr. D. Taylor. Among this lot was the champion ewe at the Sydney Exhibition, 1871. The old ewes were principally by the imported Steiger ram "No. 170." In July, 1885, Mr. Gatenby purchased twenty-two aged ewes from Mr. D. Taylor, which were principally by "Sanscrit" and "Sir Robert"—one was by "Snowball" and one by "Magenta." These ewes were in lamb to "Tom Bob II." and cost £25 per head. With this lot Mr. Taylor gave several of his very old special ewes, among them being the dam of the champion ram "Little Wonder." No other ewes have been introduced into the stud, so that, on the dams' side, it is derived entirely from the St. Johnston flock. The rams used by Mr. Gatenby have been "Tom Bob II.," "Sanscrit," "Sanscrit II.," "Union," "Panic," and "Young Billy," all bred by Mr. D. Taylor; "Silver King," and "Wellington," bred by Mr. Gatenby. The latter is by "Young Billy," by "Magenta," and his dam was a St. Johnston ewe, by "Snowball." "Wellington" was exhibited at the Northern Agricultural Society's Show in 1885, when he took first prize in his class and a special prize of 10 guineas as best yearling ram. At Hobart, the same year, he took first prize in his class, a special prize as best yearling, and Mr. Joseph Clarke's prize for best

ram in the yard. In 1886 Mr. Gatenby took a first prize, a subscription prize of £25, and champion prize, at the Northern Agricultural Society's Show, with a ewe 14 months old, bred in the stud, by "Young Billy." She also took first prize and champion prize at Hobart. "Wellington" was sold this year at Melbourne, when he was five years old, and realized 425 guineas, the purchasers being Messrs. Bailey and Wynne, of Terinallum. A ewe by "Wellington," with a lamb at foot, gained first prize this year at the Midland Show, Tasmania.

THE PISA STUD MERINOS.

The Property of Mr. Thomas Gatenby.

This flock was formed in the year 1882, with thirty-four stud ewes purchased from Mr. James Gibson, of Bellevue. The ewes were in lamb to the prize rams "Treasurer" and "Bright-Woolled Tom," both descendants of "Sir Thomas." In 1884 an addition was made to the flock of ten old stud ewes purchased from Mr. James Gibson, and, at the same time, twenty-one stud ewes were purchased from Mr. J. D. Toosey, of Cressy. They were from his "Sir Thomas" flock, and, as the name implies, were descended from sheep bred by Mr. James Gibson. From the foregoing it will be seen that the ewes in the stud were all of Bellevue blood, and mostly descendants of the famous ram "Sir Thomas." The rams used in this flock have been "Young Billy," bred by Mr. D. Taylor, by "Magenta;" "Silver King," bred by Mr. H. Gatenby, by the champion ram "King William" from a "Sir Robert" ewe; "Sanscrit III.,"

bred by Mr. D. Taylor, and given to Mr. T. Gatenby; "Little Wonder," bred by Mr. D. Taylor, twice champion ram at the Midland Agricultural Society's Show; "Union," bred by Mr. D. Taylor, by "Sir Douglas" from a "Sanscrit" ewe; "Wellington," bred by Mr. W. A. Gatenby; "Matchlock," bred in the Pisa stud, by "Young Billy," dam a ewe by "Sir Thomas II." "Matchlock" took the following prizes in 1886:—Midland Agricultural Society, first prize for ram not over 2-tooth; Northern Agricultural Society, first in class for 2-tooth ram, the New Zealand Loan and Mercantile Agency Company's special prize for 2-tooth ram, champion subscription prize (of £25), and champion prize as best ram in the yard; Hobart Show, first for 2-tooth ram and champion of the yard.

Among the weights of fleece cut by the stud sheep are the following:—"Sanscrit III.," when 5 years old, cut a fleece weighing $18\frac{1}{2}$ lbs. of very bright wool; "Matchlock," at 14 months, cut $16\frac{1}{2}$ lbs. of clean greasy wool, of 368 days' growth. The 2-tooth ewes have cut as high as 13 lbs. of clean, bright wool, of 12 months' growth. The sheep from this flock have been hitherto sold with those from the stud of Mr. W. A. Gatenby, of Lake River, but the flocks have been kept entirely separate.

THE CRESSY STUD FLOCK.

The Property of Mr. Herbert Gatenby.

This flock was formed in 1859, by Mr. J. D. Toosey and his father, with 100 stud ewes purchased from the late Mr. James Cox, of Clarendon, whose sheep at that time were ranked among the best in Tasmania. Mr. Toosey

drew his stud rams principally from the Bellevue and Mona Vale studs, and since 1871 no rams but descendants of "Sir Thomas" and "Golden Drop" have been used. In 1874 a separate stud was formed, with 23 choice 2-tooth ewes of "Sir Thomas" and "Golden Drop" blood, which were in lamb to one of Mr. James Gibson's finest stud rams, named "Woolly Tom," by "Sir Thomas." Since then this flock has been bred purely within its own lines. The famous ram "Fortune" was bred at Cressy. He was by "Samson" from a "Sir Thomas" ewe. "Fortune" gained the following prizes at the Northern Agricultural Society's Shows:—In 1878 he was placed first in his class and second for championship; in 1879 he was again second for championship; and in 1880 he was awarded first prize in his class, champion cup as the best ram in the yard, and special prize as the best unhoused ram shown. At 2-tooth his fleece weighed 13 lbs., at 4-tooth 15½ lbs., and at 6-tooth 16 lbs. Mr. J. D. Toosey disposed of his stud flock on leaving Tasmania, and leased his estate to Mr. H. Gatenby, who bought largely of the finest of the Cressy stud sheep. Mr. Toosey had such confidence in Mr. Gatenby's skill and judgment as a sheep-breeder that he authorised him to use his brands on sheep and wool, feeling confident that in his hands they would not be discredited.

In conjunction with Mr. W. H. Gibson, of Fairfield, Mr. Gatenby, in 1886, purchased four imported Vermont merino rams and eight ewes. These sheep are being bred as an experiment with some of the stud sheep. They and their produce will be kept apart from the rest of the flock.

THE RHODES STUD MERINOS.

The Property of Mr. Herbert Gatenby.

Mr. H. Gatenby commenced breeding stud sheep in the year 1875, with a selection of ewes which he obtained from the famed St. Johnston flock. Being an enthusiastic student of sheep-breeding, he fully maintained the high standard of the parent flock, and his clip soon began to attract the notice of buyers of fine merino wool in the London market. In choosing his rams he kept to the studs of Mr. D. Taylor, Mr. Jas. Gibson, and Mr. J. H. Gibson. During the last six years Mr. Gatenby has secured for use in his stud some of the finest rams in Tasmania. Of these the most famous is "Hercules," bred by Mr. D. Taylor, by "Longwool," by a son of "Sir Thomas." As a 2-tooth this ram cut 14 lbs. of fine bright wool. In 1885 Mr. Gatenby sold "Hercules," then 4 years old, in Melbourne, when he realized 1,150 guineas. At the same sale 7 young rams, by "Hercules," realized an average of a trifle over £130 per head. Another ram used in the stud was "Union," bred by Mr. D. Taylor, by "Sir Douglas," by "Magenta." As a 4-tooth this ram cut a fleece weighing 19 lbs.

The following rams, used by Mr. Gatenby, have done good service in the stud:—"Silver King," by "King William," by "Samson," a son of "Sir Thomas." This ram was only shown once, when he took first prize as a 2-tooth. (King William won the champion prize at the Midland Show in 1882, and was sold the next year in Melbourne for 362 guineas.) "Hercules 2nd," by "Hercules." "Czar," by "Sampson" (won the champion

prize at Longford in 1883, and as a 4-tooth cut 18 lbs. of unwashed wool); and "Sunbeam," by a son of "Sir Thomas 2nd." As a 4-tooth he cut a fleece weighing 18½ lbs. of bright wool. In 1836 Mr. Gatenby used a ram named "Wellington," bred by his brother, Mr. W. A. Gatenby, of Pisa.

The Rhodes stud flock is most carefully bred, the culling in the breeding flock having been very close since it was formed. The result is that the sheep present a very uniform appearance. The wool is of high quality, good staple, and very dense. The sheep are well covered on the points and underneath, and have a handsome, high-bred appearance. When I saw the stud ewes at Rhodes, I considered them as even a lot of sheep as any I examined in Tasmania.

THE ST. JOHNSTON STUD.

The Property of Mr. David Taylor.

There is no stud flock within the wide bounds of Australia that has achieved a higher or better deserved fame than that bred at St. Johnston by Mr. David Taylor. By enthusiasts in fine-wool husbandry it is regarded as the embodiment of all that is excellent in the noblest of all sheep—the pure merino. The high position this flock holds in the estimation of Australian sheep-breeders is not owing to the production of a few animals of exceptional excellence, but to the high standard of excellence that has been maintained by the flock for many years. This high standard is due to the skill, judgment, and

constant care of the present proprietor, who has made the subject of breeding merino sheep a lifelong study. So well has he succeeded in his vocation that there is not a stud flock throughout Australia but would gain in *prestige* by an infusion of St. Johnston blood. The stud was formed by the late Mr. David Taylor, of Winton (father of the present proprietor) shortly before the year 1840, with a selection of the finest ewes from the flock of Mr. W. Forlonge, whose original sheep were selected by himself from the finest merino flocks in Germany, and imported by him to Tasmania. To these sheep were added, soon after, some Saxon merinos imported from Europe by Captain Bell, of Annandale. While in the possession of the late Mr. D. Taylor the flock was regarded by sheep-breeders as one of the best-bred studs in Tasmania. In 1863 the flock came into the possession of the present proprietor, who divided it into several families, each possessing certain distinct characteristics. Since that time most of the stud rams have been bred in the flock, Mr. Taylor declining to go outside his own stud except when he could obtain animals of very superior excellence, of the purity of whose breeding he was quite satisfied. Among the sires thus introduced was "Sir Thomas," considered by most stockowners to be the finest merino sheep ever bred in Australia. Mr. Taylor thought so much of this ram that, though he had obtained the use of him from his breeder, Mr. James Gibson, of Bellevue, he made the last bid but one for him when Sir Thomas was purchased at auction by Messrs. William and Thos. F. Cumming. Another fine ram used in this stud was Sir Robert, bred by the late Mr. R. Q. Kermode, of Mona Vale. Mr. Taylor purchased this ram from Mr.

Thos. Parramore for 200 guineas when an aged sheep. He was very successful at the stud, and, among his sons, "Wool King" (a twin lamb) was sold in Melbourne to Messrs. Henty and Balfour for 200 guineas. He was resold to Messrs. Thos. Dowling and Son, of Jellalabad, for 300 guineas and half the first year's crop of lambs from 100 ewes, which brought his price up to about 700 guineas. The most important change of blood in the breeding of this stud was the introduction of a ram known as "No. 170," bred by Herr Steiger, of Leutewitz. This ram was imported by Mr. Matthew Ingle Brown, and was used in the Parramore stud for some years before Mr. Taylor bought him. "No. 170" was by "No. 159," exhibited at Hamburg in 1863; his sire "No. 20," who was exhibited at Battersea, where he was sold to Mr. J. C. Lloyd, of New South Wales, for 400 guineas. (I have not been able to learn what became of this ram.) The dam of "No. 170" was by a famous ram named "Wellington," who carried off the Grand Prize in Paris in 1856. "No. 170" was a great favourite with Mr. Taylor, who used him to his finest ewes; and his influence on the stud is apparent at the present day in the beautiful quality of the wool and the high-bred appearance of the sheep. I was shown a sample of "No. 170's" wool, preserved at St. Johnston. It is beautifully fine, and longer in staple than the wool of any imported German sheep that I have seen.

The St. Johnston stud sheep are of medium height, with sturdy, well-shaped bodies on short legs. Their wool is dense, of very high quality, and a fair length of staple. They are well covered underneath, and they have that soft downy hair on their handsome high-bred faces that

lovers of pure merinos like so much to see. They possess this great attraction to the general sheep-breeder—they cut very heavy fleeces. A 4-tooth ram sold to Mr. G. Clark, of East Talgai, Queensland, cut a fleece weighing 18 lbs. At the Sydney International Exhibition of 1880, four St. Johnston ewes were shown, and each one gained a prize, one taking the champion gold medal. This ewe's fleece weighed 14 lbs. I saw a daughter of this ewe at St. Johnston who, at the same age would, I fancy, beat this record. Many stud ewes cut 12 lbs. of unwashed wool, and at the 1883 shearing an eight months old ram cut a fleece weighing 7 lbs.; while a six months old lamb that had been fed yielded 6 lbs. of wool. As might be expected from sheep bred and reared on the beautiful St. Johnston pastures, the wool is bright and clean. Some idea of its condition may be gathered from the fact that in 1883 the clip, sold in Melbourne, realized slightly over 1s. 6d. per lb. One of the most famous rams yet bred in the St. Johnston stud is "Sanscrit," by "Sir Robert." He is of rather small size and not so well shaped as the general run of the stud sheep, but his fleece is of such remarkable density, combined with high quality and evenness, as to make him a very valuable sire. Small as he is, his fleece has weighed as high as 17 lbs. of clean bright wool. His stock inherit his own good qualities of fleece, with finer form. In several Tasmanian studs I have been able to pick out the young stock of his get by their fleece alone.

Since fine-wool husbandry has been followed in Australia, flockmasters have noticed a tendency among pure merinos to produce, at intervals, individuals bearing wool of a brilliant silky lustre, and entirely different to the

wool produced by any family of merinos in Europe or America. This feature is very pronounced in the St. Johnston flock, the most famous specimen being a ram named "Snowball." His fleece when he was four years old weighed 12 lbs., and was almost as light in grease, and certainly whiter and more lustrous, than most hot water washed wool. Mr. Taylor is now conducting an experiment with this ram, who has been put to some ewes having a similar character of fleece. "Snowball's" fleece is very beautiful, and gives one the impression that it contains more pure wool than ordinary merino fleeces that weigh several pounds heavier. I have seen several examples of sheep bearing this silky white wool, but none of it was so beautiful as that of "Snowball."

The St. Johnston stud, as will be learned from the foregoing, has been bred with a very slight infusion of outside blood. Improvement has been effected by judiciously coupling the breeders, and in this work Mr. D. Taylor has the advantage of knowing the breeding of his stud sheep for several generations back, and being able to tell the qualities and characteristics of the ancestors on each side. It is this intimate knowledge of the animals forming his stud flock, joined to natural qualifications of a high order, that enabled Mr. Taylor to breed sheep that are valued additions to the best studs in Australia.

The ewes from the St. Johnston stud are greatly admired by sheep-breeders, and always realize very high prices. In Sydney, in 1883, ten ewes realized an average of £69 12s. 3d., one ewe going as high as £101. The rams have never realized sensational prices when sold by Mr. Taylor; but after being used by other breeders they

have sold at very high rates. In 1885 a ram bred by Mr. Taylor, named "Hercules," by "Longwool," a son of "Sir Thomas," was sold in Melbourne by Mr. H. Gatenby for £1,150, the purchaser being Mr. J. H. Angas. The St. Johnston estate is situated on the Macquarie River, about a dozen miles from Campbelltown.

THE WINTON STUD MERINOS.

The Property of Mr. John Taylor.

For several years past Mr. John Taylor has bred a stud flock; but as he did not sell rams, and did not exhibit, the fact was not generally known. The Winton sheep are derived from the famous St. Johnston flock, and for many years past Mr. J. Taylor has had the use of the finest rams bred by his brother, Mr. D. Taylor. The breeding of the two flocks is therefore the same. At the last Midland Show, held early in October, 1889, Mr. J. Taylor exhibited a ram named "Woolgrower" that was greatly admired by all the sheep-breeders present. He was placed third for the championship. Mr. J. Taylor also exhibited a ewe that gained the championship in the ewe classes, this being the second time she had been awarded that prize. Both sheep are by "The Owl," a son of "Sanserit." Mr. D. Taylor, who bred "The Owl," refused 1,000 guineas for him. The Winton adjoins the St. Johnston estate.

THE MONA VALE STUD MERINOS.

The Property of Mr. Robert Kermode.

This stud was formed in the year 1829, by Mr. William Kermode, grandfather of the present proprietor. The original sheep were obtained from the Van Diemen's Land Company. When the Saxon merinos imported by the company began to fail in the mouth they were brought from Circular Head to Mount Morrison, and there sold by auction. Mr. Kermode purchased all the ewes, save about a score that were disposed of at the first sale. A stud flock was formed with the imported sheep (in all about 100 head), and rams bred by the company were used with them. While he lived Mr. W. Kermode kept strictly to the strain of blood in the Van Diemen's Land Company's flock. His son, Mr. R. Q. Kermode (father of the present proprietor), imported a few ewes and rams from the well-known Steiger flock, and used them to keep up the density of the wool. On several occasions rams from the Tasmanian studs were tried, but Mr. Kermode did not like the produce, and they were cast out of the stud. Mr. R. Pitt, who took charge of the Mona Vale flock in 1857 writes me that there were four of Sturgeon's rams on the estate, but that they were not used in the stud in his time. He mentions a "Steiger" ram bought in Melbourne whose fleece weighed as high as 20 lbs.; but his produce proved worthless and were rejected from the stud. In 1872 the executors of Mr. R. Q. Kermode sold off the Mona Vale flock and stud, when Mr. W. A. Kermode secured a considerable portion of the

stud. Finding long staple and bright wool were the fashion he, in 1873, purchased a ram bred by Messrs. Learmonth, of Ercildoune, which was used in the stud and produced some excellent sheep. In 1876 a ram bred by Mr. D. Taylor was used in the stud. This ram was from a stud ewe purchased by Mr. Taylor at the sale of the Mona Vale stud. The wool of the Mona Vale sheep has been celebrated for the highest quality for over half a century, and it has always commanded a very high price in the London market. Since its formation there have been very few changes of blood introduced. The Steiger rams were always sparingly used, and the Ercildoune sheep have a strong infusion of Mona Vale blood, as Messrs. Learmonth purchased 100 ewes from Mr. Kermode in 1861. Of these ewes Mr. T. Learmonth wrote:—"I consider the addition of these 100 ewes more valuable to the Ercildoune flock than would be the best 100 that could be obtained from Germany." Mr. A. R. Stackhouse, manager of the estate, furnished me with the following particulars respecting the prices realized by the Mona Vale wool in the London market:—"I have made out, from account sales, the average price per lb. of the Mona Vale wool in the English market for the last twenty years, and find it is 2s. 7 $\frac{3}{4}$ d. per lb." The highest prices have ranged from 4s. in 1856 and 1860—in the latter year the average of the whole clip was 3s. 4 $\frac{1}{2}$ d.—to 3s. 1d. in 1852, 3s. 7d. in 1863, 3s. 7 $\frac{1}{2}$ d. in 1866, 3s. 2 $\frac{1}{2}$ d. in 1872, 3s. 0 $\frac{1}{2}$ d. in 1874 (average 2s. 6 $\frac{1}{4}$ d.), 3s. in 1875, and 3s. 2d. in 1876. The Mona Vale wool has taken many valuable prizes. The sheep have assisted greatly in building up many high-class studs in these colonies. The stud flock is now owned by Mr. Robert

Kermode, who purchased it from his brother about two years ago. The estate is situated about four miles from the town of Ross.

QUEENSLAND.

THE EAST TALGAI STUD MERINOS.

The Property of Messrs. G. Clark and Co.

Messrs. G. Clark and Co. commenced breeding pure merinos at East Talgai in the year 1867, when they purchased 100 ewes from Mr. Thos. Shaw, of Wooriwyrite, Victoria. With these ewes were used some rams purchased from Messrs. T. and S. Learmonth, of Ercildoune. With such a foundation, in the hands of a skilful sheep-breeder, it would naturally be expected that a high class of sheep would be raised in the stud. Such, however, was not the case. The climate and conditions of life at East Talgai did not suit the Victorian sheep. They deteriorated rapidly—grew bare on the points, weak in the staple, uneven and faulty in the fleece. Disappointed with the result, Messrs. Clark and Co. resolved to try if the Tasmanian merino would succeed better. Being natives of the island colony, and reared in the district where the finest merino flocks are raised, they knew where to go to secure the type of sheep they wished to breed. The old stud was dispersed and a new one formed, in 1870, with 30 ewes and 3 rams purchased from Mr. R. Kermode, of Mona Vale, and next year 45 ewes and

several rams from the Mona Vale flocks were added to the stud. The Tasmanian sheep answered all expectations. In writing about them, Mr. G. Clark remarks:—"Directly I went back to the old style of merino we used to breed in Tasmania, a decided improvement ensued, especially in the weight of fleece. Although somewhat shorter in staple than the wool of the Victorian sheep, it realizes as much per lb. in the London market." In 1876 an addition was made to the stud of several rams, bred by Mr. David Taylor, of St. Johnston, and on several occasions since rams and ewes have been purchased from that well-known stud. The result of the infusion of the St. Johnston blood into the stud was such a marked improvement in the stock that the East Talgai rams came into great favour with flockmasters in all parts of Queensland.

Mr. G. Clark is an enthusiast in sheep-breeding, and is a determined opponent to pampering his stock, believing that the hardihood of the animal is thereby impaired. Like all Tasmanian sheep-breeders, he is a strong advocate for purity of blood. The East Talgai stud is closely culled every year, and anything like overstocking is carefully avoided. The main points sought in coupling the breeders are to produce a strong, robust animal, clothed with a fleece even in length of staple and fineness of wool, well covered on the points and underneath, and with such a weight of fleece as will render the sheep highly profitable to the flockmaster. The East Talgai stud is a union of those two famous studs—Mona Vale and St. Johnston, the character of the sheep being somewhat modified by climate and pasture. The most important feature in the management of this stud is the

skill shown in mating the breeders and in the annual rejection of all animals that fall short of the standard of excellence. In going through the East Talgai stud, I was struck with the resemblance they bore to their Tasmanian ancestors. They have all the beautiful quality of wool, density, evenness, and covering that makes the Tasmanian merinos such favourites with Australian sheep-farmers. When I visited the stud a yearling ram, named "Jack Dowling," took my fancy greatly. At the Toowoomba Show, 15th August, 1889, this ram took champion prize in the fine-wool classes. The highest price ever obtained for a single ram was for "Queenslander," sold in Sydney, 1883, for £465. The purchaser was Mr. W. Kermode, Mona Vale. Latterly Messrs. Clark and Co. have purchased a son of "Queenslander," bred at Mona Vale, to use in their stud.

East Talgai is situated on the Darling Downs, about six miles from the Hendon station. The country is open forest, with gently swelling banks, and exceedingly well grassed.

THE GLENGALLAN STUD MERINOS.

The Property of Messrs. Marshall and Slade.

This stud was formed in 1855 by the late Mr. John Deuchar, the then proprietor of Glengallan, with 100 ewes purchased from the Aberdeen Company (now the North British Agricultural Company). These ewes were from what was known as the Company's Rosenthal flock, which was formed early in the forties with a selection of sheep from the famous Brindley Park stud. The origi-

nals of the Rosenthal flock were selected by Mr. F. Bracker, who had the charge of the company's flock for many years. Acting on the advice of Mr. Bracker, the company made several importations of rams from the flocks of Steiger and Gadegast, which were used in the stud. The 100 ewes purchased by Mr. J. Deuchar were by one of three imported rams. With these ewes a ram by an imported Saxon ram from a choice Brindley Park ewe was used. This ram developed into a remarkably fine sire. He was known all over the Darling Downs as "Old Billy," and was invincible in the show-grounds. His stock inherited his good qualities. Some years after the formation of the stud Mr. Deuchar visited Europe and selected 10 ewes and 10 rams from the stud of Baron von Maltzahn, in Mecklenburg, which were added to the stud. These sheep were descended from the Negrette cavaña, the originals having been obtained direct from Spain, and always kept pure. The imported ewes were used with "Old Billy," and the imported rams were used with his female progeny. In 1862 Mr. G. H. Marshall visited Europe and made a further selection of 10 rams and 15 ewes from Baron von Maltzahn's flock, which were added to the stud. It will be seen from the foregoing that the Glengallan stud has a foundation of Saxon blood, into which there has been a heavy infusion of Negrette blood. Climate, and the system of breeding pursued by the various persons who have had the charge of the stud, have effected considerable alterations in the type of the sheep. The wool has been lengthened greatly in the staple and it has become much brighter, while the quality has been maintained and the weight of wool per sheep considerably increased. The sheep are somewhat

short on the leg, and have robust, well-shaped bodies, which are remarkably well covered with wool. When I visited Glengallan about two years ago I found the sheep showed the influence of the Negrette blood in their pedigree in the ample folds on the neck and chest, and in the yolk, which is heavier than is usual with Victorian sheep. This abundance of yolk is regarded as a good quality by breeders of merino sheep in Central Australia, as it prevents the wool from being withered by exposure to the great heat of the sun. Since 1873 the Glengallan stud has been under the charge of Mr. W. B. Slade, the resident partner, and in his hands the breeding of the sheep has been most carefully attended to, and a strict record of every animal in the flock is kept. At lambing time the lambs are carefully mothered and marked in the ear with Indian ink. Up to the time I visited Glengallan the stud had been very successful at the leading shows in Queensland. They had taken 27 champion prizes and 176 other prizes. At the Intercolonial Show, held at Brisbane, 1882, the Glengallan wool was awarded the grand champion prize and two gold medals. Since my visit the Glengallan stud sheep have been frequently placed at the top of the prize list at the Toowoomba Show, where the best sheep in Queensland are exhibited. The Glengallan estate is situated near the eastern edge of the Darling Downs. The Hendon station, on the Southern Queensland railway, is about eight miles off.

THE CANNING DOWNS STUD MERINOS.

The Property of Mr. J. D. M'Ansh.

Mr. M'Ansh formed his flock in the year 1867 with 500 ewes and a few rams which he purchased from his former partners in the Cunningham Plains station, situated in the Murrumbidgee district of New South Wales. These sheep were for several years previous to 1867 under the management of Mr. M'Ansh. The rams used in the flock were drawn from the well-known flocks of Mr. E. K. Cox, of Rawden, and Mr. Lawson, of Mudgee. Finding the sheep were of smaller size than he liked, Mr. M'Ansh wrote to his partner, Mr. Salting, who was then in Europe, to send him some large-framed merino rams. Mr. Salting selected some Rambouillet rams, and with them sent a large-framed ram which he bought from a Mr. Donovan, who was taking a shipment of merinos to South Africa. This ram, Mr. M'Ansh considers, was the finest merino sheep he ever saw. He endeavoured to find out where Mr. Donovan obtained his sheep, and it was not till many years after he learned that the ram he liked so much was one of 30 rams Mr. Donovan bought in Spain. He opened a correspondence with Mr. Donovan in South Africa, where he still bred sheep descended from his original importation. He obtained samples of the wool of these sheep and sent an order for some rams; but in the meantime the Australian ports were closed against foreign sheep, and he was obliged to countermand the order. On leaving Cunningham Plains Mr. M'Ansh removed his little flock to Gurley, in the Liverpool Plains district of New South Wales. He then

imported some more Rambouillet rams, but they were not equal to those selected by Mr. Salting. About 1868 Mr. M'Ansh purchased three ewes from the Cunningham Plains flock that were awarded first prize at the Sydney Show. On the way to Gurley they remained some time at Mr. A. Loder's station, and while there were served by one of Mr. Loder's best rams. From these ewes two rams were produced, one of which was used for many years in the stud. When nine years old his fleece weighed 10 lbs. 8 ozs. of greasy wool. In 1875 Mr. M'Ansh sold Gurley and removed to Canning Downs, taking with him a choice selection of the stud, which he has bred since without using any rams but those from his own flock. The Canning Downs sheep show plainly in their size and character of fleece the influence of the Rambouillet blood in their pedigree. They are of good frame, and have long-stapled wool of fair quality, which is something between fine and robust combing. They yield good fleeces, the rams going as high as 18 lbs., while 14-lb. fleeces are common. Ewes' fleeces have been weighed up to 15 lbs., and 12-lb. fleeces are frequently met with among the stud ewes. During a very heavy flood that occurred in January, 1887, Mr. M'Ansh had the misfortune to lose all the finest aged rams and ewes in his stud—about 200 rams and 300 ewes being drowned. Among the rams were some sheep that it was impossible for him to replace. Canning Downs is situated two miles from the town of Warwick, on the Southern Queensland line of railway.

THE ETON VALE STUD MERINOS.

The Property of Messrs. Hodgson and Ramsay.

The Eton Vale flock was formed in 1850 by Mr. John Watts with a number of ewes from the Brindley Park flock, purchased from Mr. A. Sandeman. The first sires used were a couple of imported Steiger rams, and afterwards rams from the Rosenthal flock were used. These sheep were descended from Brindley Park ewes and imported German merino rams. In 1856 the finest ewes in the flock were selected to form a special stud, and with them Rosenthal rams were coupled. In 1863 Messrs. Hodgson and Watts imported six Silesian rams, which were by the prize ram at the Berlin Exhibition. In 1864 eighteen Steiger rams were imported. These rams were by a couple of very superior sires that were afterwards sold for 400 guineas. The last importation of rams was in 1870, when six Steiger rams were added to the stud. In 1879 an experiment was made with some Glengallan rams, which resulted so satisfactorily that in 1883 a high-class ram was purchased from Glengallan, and used extensively in the stud. The wool on the Eton Vale sheep was originally a clothing wool, but careful selection, aided by climate, has in the course of years produced a very high-class combing wool. The introduction of the Glengallan blood into the Eton Vale stud has proved very successful. The sheep, though not large, are well shaped, and have excellent constitutions. They are well covered, and their wool is of a brighter description than most of the wool grown in Queensland. I have seen many fleeces on the Eton Vale sheep that were

almost as bright as those grown on the stud sheep in the Western District of Victoria. The stud has for some years been under the management of Mr. E. D. Hodgson, son of one of the proprietors. The sheep on the estate are of a very profitable description. The year before I visited Eton Vale the clip averaged 7 lbs. 2 ozs. (exclusive of lambs), and a large proportion of the grown sheep were breeding ewes. The Eton Vale estate is situated about four miles from the Cambooya station, on the Southern Queensland railway.

THE BALGOWNIE STUD MERINOS.

The Property of Mr. William Hogarth.

This stud is descended from the old Glengallan stock, Mr. Hogarth having many years ago purchased 1,000 ewes from Glengallan. He selected the finest ewes, and with them formed a stud flock. Since it has been formed there has been no infusion of outside blood into the Balgownie stud save a few Rosenthal rams. The rams used have been bred in the flock, and all improvements have been effected by selection. The type of sheep in this flock is quite different from any other that I know of—indeed it may be said to be the only truly clothing wool in Australia. The wool on the Balgownie sheep is short, very fine, and remarkably elastic. The sheep are short-legged, with stout, well-shaped bodies, and very handsome heads. The wool is very dense, and the sheep are remarkably well clad all over, so that, notwithstanding the shortness of the staple, they yield fleeces that are

almost equal in weight to those of the long-stapled wool that is now universally popular with Australian flockmasters. Though so different in appearance to the ordinary merino of Australia, there is something very taking in the appearance of the Balgownie sheep—they are so handsome and have such a high-bred appearance. Their wool carries a deal of yolk, with a pronounced black tip, but when well washed in hot water it yields a good weight. The season previous to my visit to Balgownie in 1888, the grown sheep in the whole flock yielded 3 lbs. 12 ozs. of hot water washed wool. That the wool is well got up is proved by the fact that previous to 1886 the Balgownie wool never sold below 2s. per lb. A test of the various studs on the Darling Downs was made in 1882, when 10 sheep selected by the owners of the Yandilla, Headington Hill, Jondaryan, and Balgownie studs were publicly shorn on the same date, and the lot run together for 12 months on the Yandilla estate. The next season the sheep were shorn, and the wool from the competing sheep was sent to Messrs. R. Goldsbrough and Co., Melbourne, to be valued. The prize was a sweepstakes of £5 each, to go to the highest average value per fleece. The result was:—First, Headington Hill, average weight 6 lbs. 14 ozs., value a fraction over 6s. 9d. per fleece; second, Yandilla, 6 lbs. 8½ ozs., value a fraction over 6s. 8d. per fleece; Jondaryan, 6 lbs. 11 ozs., value a fraction over 6s. 7d. per fleece; Balgownie, 7 lbs. 7½ ozs., value a fraction over 6s. 4d. per fleece. Mr. Hogarth is of opinion, judging from the price his wool has realized for many years past in England, that the judges undervalued it. This is not unlikely, as a purely clothing wool such as that from the Balgownie sheep, is

never met with in the Melbourne market. The test was not conclusive because, to give exact results, the wool should have been scoured and sent to England to be valued. Though used all my life to merinos with combing wool, I was greatly taken with the beautiful Balgownie sheep.

THE JIMBOUR STUD MERINOS.

There are two stud flocks bred on the Jimbour estate, one of which has a most interesting history. It is called

THE LE GRAND STUD.

A French gentleman, named M. Le Grand, who resided for some years in Queensland, revisited his native land, and, when about to return to the colonies, his relatives in Spain advised him to take with him some Spanish sheep. He followed their advice, and on his return to Brisbane, about the year 1870, brought with him two rams and two ewes from one of the Spanish stationary flocks. While in Queensland I made frequent attempts to find out from what part of Spain these sheep came, but without success. Having no place on which to keep the sheep when released from quarantine, M. Le Grand decided to sell them. It happened that Mr. J. Wallace, the manager of Jimbour, went to the quarantine station to examine some Tasmanian rams, and, being much taken with the Spanish sheep, persuaded the late Sir J. Bell, then one of the proprietors of Jimbour, to buy them. These sheep were entirely different to what is generally considered as the type of the Spanish merino. They

were of large frame (one ram weighed 210 lbs. and the other 196 lbs.) with soft faces and strong horns. The wool was of fair quality and good staple, combined with density, and fairly even. The yolk was clear, bright, and oily, and the wool was free from black tip. Though heavily worked, and never fed or housed, these rams' fleeces never weighed less than 14 lbs. of clean unwashed wool. The finest ewes were selected from the Jimbour flock and put to the Spanish rams, and with the pick of the produce a stud flock was formed. The imported Spanish ewes unfortunately died soon after arriving in the country. Breeding in to the Spanish rams was practised for a time, and since then the rams used have been bred in the stud. The sheep are large framed, the wool is dense, even, and of fair length of staple. The favourite stud ram at the time I visited Jimbour was "King James," a son of the larger imported Spanish ram. He was shown at the New South Wales Intercolonial Exhibition and carried off first prize in his class and champion prize for heavy combing wool ram. On his return from Sydney he was shorn in quarantine, when his fleece of nearly 13 months' growth weighed within a fraction of 18 lbs. of clean, unwashed wool. All the sheep in this stud take after their Spanish ancestors in the character of the yolk, which is clear and oily. The wool is brighter than is usually seen in the warmer parts of Australia.

THE JIMBOUR STUD.

The originals of this flock were brought from Maitland about 50 years ago. They were considered good sheep, but the wool was shorter in the staple than was thought

advantageous. For many years German rams and their descendants were used in the flock. About 20 years ago the best ewes on the estate were selected, and with them a stud flock was formed. To these ewes an Ercildoune ram was put, in order to counteract the tendency to shortness of staple. By a careful selection of the breeders the desired length of staple was obtained, though it took several years to accomplish it. The sheep in this stud show plainly in their wool and appearance the effect of their Ercildoune ancestor. They are sturdy, thick-set sheep; their wool has a good staple, combined with fair density and high quality. The yolk has not the brightness of the *Le Grand* stud. The wool loses little in the washing, the clip weighing from 3 lbs. 10 ozs. to 3 lbs. 12 ozs. of washed wool all round (lambs included). The finest stud ram when I saw the flock was one that took second prize in the class for fine combing wool rams at the New South Wales Exhibition, being beaten by "Prince II.," shown by Messrs. W. Gibson and Son, of Scone, Tasmania. When shorn on his return his fleece of nearly 13 months' growth weighed a trifle over 17 lbs.

The estate is partly in the plain and partly in open forest undulating country. The Macalister railway station, 167 miles from Brisbane, on the Roma line, is on the property.

THE ELLANGOWAN STUD MERINOS.

The Property of Mr. C. B. Fisher.

This stud is descended from the famous old flock formed by Mr. C. B. Fisher in South Australia in 1854 or '55 with selections from the Bundaleer and Hill River flocks. The originals of these flocks were imported from New South Wales in the early days of South Australia. Before coming into the possession of Mr. Fisher, rams bred by Mr. John Murray, of Mount Crawford, had been freely used in both flocks. The large size of these sheep, and the heavy fleeces cut by them, led to an impression being formed in the minds of some Australian sheep-breeders that there was a mixture of English longwool blood in their pedigree. Some correspondence on this subject appeared in the *Australasian* during the year 1881. Mr. Fisher denied that any longwool sheep had been used in either flock. He stated, in a letter dated 9th March, 1881 :—"The sheep were originally purchased by me from the Hon. W. Robertson, now of New Zealand, and Mr. J. B. Hughes, now of Adelaide, and having, prior to my purchasing them, had for several years numerous stock transactions with these gentlemen, I can safely assert they never used any Leicesters, and do not think there were any in the colony." In reply to this, Mr. Thos. Shaw published, on 19th March, 1881, a letter from Mr. J. B. Hughes, stating that he bought his original sheep from an overland party. They were bred by Messrs. Icely and Lawson, New South Wales, but that he used Mr. F. H. Dutton's rams, which were half-Leicesters. On the 26th March, 1881, Mr. Hughes wrote

that he used Lord Western's rams, sent out by his brother. He obtained a fleece of the best type from Mr. T. Southey, and bred up to it. After some years he selected 300 ewes having wool as near the standard fleece as possible, and put them to rams bred by Mrs. Dorrien, which were imported by Mr. J. Horrocks. Mr. Fisher then wrote to Mr. F. H. Dutton in England, and received the following reply :—

“ THE PALACE HOTEL, 14th July, 1881.

“ SIR,—The same questions were put to me by Mr. Morris some weeks ago, and I replied, and say again to you, that I never possessed a crossbred sheep or sheep of any kind but that of the merinos, excepting some Rambouillet rams, which I imported from France, which were large-framed sheep, and possibly a certain misapprehension may have arisen through this cross with the Andaly flocks many years ago.

“ (Signed) F. H. DUTTON.”

Since the sheep came into the possession of Mr. Fisher, he has bred from rams drawn from the flock. In 1869 Mr. Fisher reserved the whole of the season's lambs and sent them to his property at Headington Hill, on the Darling Downs. The sheep were kept on this property until a few years ago, when they were removed to Ellangowan, also on the Darling Downs, where they still remain. For 35 years these sheep have been bred without any admixture of outside blood. For size of carcass and weight of fleece they have very few equals in Australia. In the show-yards they have ever proved

formidable opponents. When the original flock was held by Mr. Fisher, the sheep were remarkably successful in the show-yards. The branch flock purchased by the late Mr. E. W. Pitts, of The Levels, S.A., worthily sustained the fame of the old flock, and the Ellangowan stud has been quite as successful in the northern colony. (At the sale of The Levels stud on the death of Mr. E. W. Pitts, Mr. M. O'Shanassy, of Moira, purchased largely of the finest sheep in the stud. These sheep are now kept on the Moira estate, Victoria.) The selection in this flock has been very strict since its formation. Size of frame and weight of fleece are the main objects sought by Mr. Fisher. Quality of wool is a secondary matter. I visited Ellangowan in 1887 and found that the sheep had not deteriorated in size of body and weight of wool since their removal to Queensland. In looking over the records of the previous ten years, I gathered the following facts:—In 1877—a bad year—the stud ewes cut an average of 6 lbs. 13 ozs. of greasy wool. In 1878, also a bad year, 550 stud and flock rams cut an average of 8 lb. 2 ozs. of greasy wool of 11 months' growth. In 1879 the ram hoggets averaged 8 lbs. 3 ozs., and the clip of 8,000 flock ewes averaged 7 lbs. 2 ozs. In 1880 the drought was very severe: 541 stud breeding ewes averaged 7 lbs. 6 ozs. In 1881 440 ram hoggets averaged 8 lbs. 1 oz., and 754 ewe hoggets averaged 7 lbs. 2 ozs. In 1882, 700 flock rams averaged 8 lbs. 2 ozs. of 11½ months' growth; 17 show rams' fleeces averaged 15 lbs. 8 ozs., and 12 ewes' fleeces averaged 11 lbs. 4 ozs. In 1883—a very bad year—735 stud and flock rams averaged 8 lbs. 11 ozs., and 280 selected ewe hoggets averaged 8 lbs. 14 ozs. In 1884, 65 selected ram hoggets

averaged 12 lbs., and 158 selected ewe hoggets averaged 10 lbs.; 179 registered stud ewes, with lambs at foot, averaged 9 lbs., of a little under 12 months' growth. In 1885, 217 registered ewes, with lambs at foot, averaged 8 lbs. $4\frac{1}{2}$ ozs.; 256 stud ewes, with lambs at foot, averaged 8 lbs. $1\frac{1}{2}$ ozs., and 19 selected 2-tooth rams averaged 15 lbs. 7 lbs. In 1876, 1,924 stud ewes, with 82 per cent. of lambs, averaged 7 lbs. $9\frac{1}{2}$ ozs., and 5,100 breeding flock ewes cut 7 lbs. $0\frac{1}{2}$ oz. The average for the year of the flock was 7 lbs. 8 ozs. The greater portion of the rams bred in the flock are required for Mr. Fisher's stations in the north. When sent to market, rams from this stud always realize good prices.

THE WELLTOWN STUD MERINOS.

The Property of Messrs. Loughlin and Co.

The Welltown pastoral property was taken up by Messrs. J. and W. Low, who, in 1856, made their first purchase of sheep, namely 2,500 ewes, bred by Mr. J. B. Bettington, of Brindley Park. Since that no ewes have been added to the flock. For many years the rams used in the flock were obtained from Mr. F. Bracker, of Warroo, who obtained the originals of his flock from Mr. Bettington. Mr. Bracker was justly regarded as the most skilful breeder of merino sheep in Queensland. The Warroo rams did a deal of good, their produce being of great excellence. Messrs. Low kept a small stud flock from the first, and in 1875 two rams bred by Messrs. G. Clark and Co., East Talgai, were used with good results.

Afterwards, rams from the flocks of Mr. Jas. Gibson, Bellevue; D. Taylor, St. Johnston; and J. D. Toosey, Cressy, were used. The result of careful breeding was such that Messrs. Low carried off the first prize for strong combing ewes' wool at the Sydney International Exhibition, 1880. In the year 1879 the greater portion of the Welltown clip realized 2s. 5d. per lb., cold water washed, and at that time the sheep were shepherded and yarded at night. Owing to bad seasons, washing the sheep has been given up, but the prices realized by the wool have been very satisfactory. In 1883 and 1884 the fleece wool averaged 1s. per lb., and in 1885 it sold for 10 $\frac{3}{4}$ d. Messrs. Loughlin and Co. purchased the property and flock in 1882, and as they found the produce of the Tasmanian-bred sires satisfactory they made extensive purchases of rams from Messrs. W. Gibson and Son, Herbert Gatenby, and Chas. Field. A lot of choice Tasmanian ewes were also added to the stud at the same time. The stud sheep show very plainly the large infusion of Tasmanian blood in their breeding. Owing to the great distance of Welltown from the leading shows, and the difficulties of transit, the stud sheep have not competed at any sheep shows. The country for several years past has suffered severely from droughts, but nevertheless the sheep yield excellent fleeces: 34 stud hoggets cut an average of very nearly 10 lbs. The young rams' fleeces range from 12 lbs. to 16 lbs. of greasy wool. Welltown is situated in Southern Queensland, on the Barwon and Weir rivers. The country is myall and coolabah forest.

THE BRAESIDE BLACK MERINOS.

The Property of Mr. Wm. Allen.

Noticing that black lambs were often dropped in the highest bred merino flocks, Mr. W. Allen conceived the idea of forming a flock of entirely black merinos. He commenced the experiment in the season 1877-8 with a few black sheep, and to his surprise the produce of black sires and dams were invariably black, the only white being an occasional small spot on the forehead and a white tip to the tail. In selecting the sheep for this flock Mr. Allen is particular to take none but what have a black tongue and a black roof to the mouth. These black merinos appear to be much hardier and more active than the white merinos. Though they do not fatten so well as the white sheep, they withstand the drought better. The mutton is dark coloured, and is of excellent flavour. The wool is highly prized. In 1885 the whole of the wool from this flock realized 1s. 6½d. in London, which was nearly double the average of some of the white merino flocks in the same district. The wool, when properly bleached before finishing, does not fade, and the fibre, not being injured by any dye, lasts for a very long time. Most of the original sheep were drawn from several of the finest flocks of merino sheep in Queensland. Braeside is near Dalveen, on the Darling Downs.

SOUTH AUSTRALIA.

THE MOUNT CRAWFORD STUD MERINOS.

THIS grand old flock has been divided among the sons of the late Mr. John Murray—namely, Mr. John Murray, of Rhine Park; Mr. T. Hope Murray, Mt. Beavor; Mr. W. A. Murray, Cappeedee, and Mr. Alick J. Murray, Mt. Crawford.

This flock, one of the oldest in South Australia, was founded in 1842 by the late Mr. John Murray, with some sheep the breeding of which he was unable to give me any particulars, save that one portion was from New South Wales and the other from Tasmania. It has been frequently stated that this stud derives all its excellence from the New South Wales sheep, which were supposed to be from the Camden stud. This, Mr. Murray stated to me, was a mistake. His brother had the management of a flock in the early days of the colony that were said to be from the M'Arthurs' flock, but none of these sheep were introduced into the Mt. Crawford flock. The original sheep were of two types. The New South Wales sheep were of large frame and had somewhat open wool of good length of staple. The Tasmanian sheep were of small size and had short, dense wool. For some years both styles of wool were grown in the flock, but gradually the whole of the sheep produced combing wool, the density being kept up, while the staple was lengthened. Mr. Murray took his first prize in 1845 with a ewe that was exhibited in a pen with two of his brother's sheep. This ewe afterwards produced a cele-

brated champion ram named "Mount Crawford." He was a twin lamb, and while his wool was long in staple his brother's was short and dense. The old ewe was killed when she was fifteen years of age, and it was discovered that she was then in lamb. "Mount Crawford" took his first prize at 10 months old, and afterwards gained many honours in the show-yard. Since "Mount Crawford's" day no rams but his descendants have been used in the stud, which has been in-bred for nearly 48 years. Mr. Murray considered the finest ram ever bred by him was "Prince Imperial," who carried off two champion prizes in consecutive years, and served 100 ewes each year. His fleece was for three successive years one of the six that took first prize in Adelaide. When three years old his fleece weighed 18 lbs. 12 ozs. of greasy wool, and his live weight was 205 lbs.

Mr. Murray believed that by breeding in a particular way he could influence the sex of the progeny. He told me that when he commenced sheep-farming, wishing to obtain as many female lambs as possible, he bred from his young sheep, and the result was that the greater portion of the lambs were ewes. In discussing the principles that guided him in sheep-breeding, he said—"I take great care to breed from rams of strong constitution with as much quality, length of staple, softness, and lustre as possible, with ample yolk, but never lose sight of great weight of wool." A famous ram in this stud was "Trophy," so named from his having carried off the Old Colonists' trophy, a piece of plate valued at 150 guineas. As a grass-fed ram "Trophy" won the prize in competition with fed and housed sheep. Mr. Murray was offered and refused 500 guineas for him.

As might be expected from the way in which they are bred, the Mount Crawford sheep are singularly alike in form and fleece. The type is an excellent one and has been held in the highest estimation by the most experienced flockmasters in South Australia. The stud rams have been extensively used in Central and Western Australia. The wool is of a very excellent description. The judges' remark at the Sydney Show, 1873, was:—"Mr. Murray's wool is a remarkable combination of softness and strength. A bright, lustrous wool, exceedingly clean." The weight of wool cut by the Mount Crawford sheep shows their profitable quality. The breeding ewes yield $8\frac{1}{2}$ lbs. to $8\frac{3}{4}$ lbs. of greasy wool. The rams average over 14 lbs. The heaviest fleece cut by a stud ram is mentioned in a letter by Mr. C. Wade, of the Paratoo station. He says:—"We sheared a 4-tooth ram bred by you this day (9th October, 1876). He cut a fleece weighing 26 lbs. net. The same ram was shorn here on the 17th October, 1875, as a 2-tooth, when he clipped 19 lbs." The list of prizes taken by Mr. Murray's sheep is a formidable one. Up to 1879 they had taken money prizes to the value of £389, besides four silver cups, four gold medals, and one trophy value 150 guineas. The wool has been awarded prizes at Philadelphia and London. The Mount Crawford sheep have won all their honours off the natural pastures of the country. Mr. John Crawford was a staunch opponent to anything like pampering or coddling his sheep, and never fed or housed them. Of the estimation in which they have been held by Australian sheep-farmers the following particulars furnished me by the late proprietor will give a good indication. He says:—"My total sales from 1st August,

1856, to January, 1885, have been 18,459 rams, for a sum total of £91,048 2s. For the 14 years before 1856 I sold a large number, of which I have no record. From 1842 to 1856, when I commenced to keep a record, I had almost the monopoly of South Australian ram sales."

On the death of Mr. John Murray the Mount Crawford flock was divided among his four sons. The estates where the sheep are kept are—Rhine Park, Eden Valley, situated 50 miles from Adelaide, reached by coach twice a day; Mount Beevor, Nairne, 35 miles from Adelaide—Nairne is reached by trains twice a day; Cappeedee, Hallett, 120 miles from Adelaide—trains run to Hallett twice a day; Mount Crawford, 35 miles from Adelaide—the nearest railway station is Gawler.

THE YALLUM STUD MERINOS.

The Property of Mr John Riddoch.

The country now known as Yallum Park was originally taken up as a squatting station by the brothers Solomon, Josiah, and Thomas Austin, all of whom were excellent judges of merino sheep and experienced stock-breeders. So far back as 1836 the flock they bred at Yallum was regarded as one of the very best in that part of the country. Mr. Thos. A Wells, who then managed the station, describes them as being of the true type of Spanish merinos. Mr. Solomon Austin was of opinion that the weight of fleece might be increased without sacrificing softness, brightness, or quality of wool if the proper type of ram could be found; and to obtain these

he made a voyage to Europe in 1838. He visited the leading stud merino flocks in Germany, and selected such rams as he thought would suit his purpose. The German rams were used in the Yallum flocks for fully 10 years, and their progeny gave satisfaction. They were of large frame, and their wool was of excellent quality. Mr. Wells believes that the ewes by the German rams were larger and finer fleeced than any sheep in Victoria at that time. In 1852 Mr. Wells selected 130 young rams from the stud of Mr. John White, of Konongwotong, whose sheep at that time stood very high in the estimation of the sheep-breeders in western Victoria. The sires of these rams were selected by Mr. White from the Camden, Cox's, and other famous studs in New South Wales. The Konongwotong rams were used in the Yallum flock till 1861, when Mr. John Riddoch purchased the estate, and with it the flock. The Yallum sheep had by this time advanced to the front rank in the estimation of the flockmasters of the south-eastern district of South Australia. They were noted for well-developed frames, dense fleeces, and high quality of wool.

In 1862 Mr. Riddoch purchased two Negrette rams, having wool of high quality, and with larger frames than is usual with that strain of blood. The finest ewes in the flock were put to these rams. The result was a great success, the young sheep having heavy fleeces of good quality of wool, dense, and of fair length of staple. About 1866 Mr. Riddoch purchased at Skipton five rams bred by Mr. Thomas Dowling, of Jellalabad, they being the pick of that year's draft. About this time I visited Yallum, and saw some of the stud sheep. I was so much impressed by them that I recollect the type perfectly

well. • They were thickset sheep on short legs, and remarkably well clad, and with a high-bred appearance. In 1867 five rams bred by Mr. James Gibson, of Bellevue, Tasmania, were purchased at auction in Melbourne, and were used in the stud. In 1872 the executors of the late R. Q. Kermode sold off the famous Mona Vale stud sheep, and Mr. Riddoch secured 100 of the best ewes and 2 rams of extra quality. Probably the finest ram ever used in the Yallum stud flock was purchased in 1872. He was bred by Mr. James Gibson, and was a son of the famous "Sir Thomas," from a Bellevue ewe. He was used in the stud for many years, and produced some very fine stock. On several occasions Mr. Riddoch purchased rams at the principal sales when he saw one good enough for his purpose, and invariably they were from the Jellalabad or Bellevue studs. One ram purchased was bred by Messrs. W. Gibson and Co., of Scone. He was by a Hampton Court ram, purchased by Mr. Wm. Gibson, jun., while in England. His dam was a Scone ewe, with a very heavy fleece, and her sire, "No. 100," always cut 20 lbs. of wool, white and light in grease. The latest addition to the stud is a ram named "Sir Roger," bred by Messrs. T. Dowling and Son, and having a strong strain of the Bellevue blood in him. He has nicked well with the Yallum ewes, and several of his progeny have taken prizes. Last year, though heavily worked and 10 years old, he cut a fleece weighing $11\frac{3}{4}$ lbs. of clean, bright wool, light in grease.

This flock has had the good fortune to be under excellent management from the time it was formed, over half a century ago. Mr. T. A. Wells, who acted as manager for Messrs. Austin Bros., was a great admirer of the true

Spanish type of merino. Mr. W. Wade, who took charge of the stud when first formed, was for some time with Mr. J. L. Currie, of Larra. After his time the stud sheep were classed for several years by Mr. Chas. Dowling, of Jellalabad, and now they have the advantage of being under the care of such a skilled sheep-breeder as Mr. Laird, who for many years had the charge of the celebrated Mount Fyans stud flock. Though so old a stud, the culling has been so severe it is still comparatively a small one. The sheep have a strong family likeness, in which the Saxon type is strongly marked. The wool sells well; the highest price was in 1870, when a parcel of greasy fleece realized 1s. 8½d. per lb. The Yallum sheep have taken numerous first and champion prizes at Penola, Narracoorte, Apsley, Edenhope, and Mount Gambier. At the South Australian Agricultural Society's Show, 1867, Yallum Park wool was awarded the gold and silver medals presented by H.R.H. the Duke of Edinburgh. In 1888 Mr. Riddoch exhibited for the first time at the Australian Sheep-breeders' Association Show in Melbourne, and though his sheep laboured under the disadvantage of having to travel long distances by waggon and by rail, they occupied a very honourable position in the prize list. Eight sheep were shown in six classes, in competition with the very pick of the Victorian stud flocks. They were awarded two third prizes, a fourth, and a fifth prize.

Yallum Park is situated close to Penola. The country is of limestone formation, with black soil flats. The climate is mild, and there is a good rainfall, but the soil being shallow on the limestone rock, it soon burns up in summer.



Bungaree stud ram „*Champion*“ 1882 № 83.

Bred by the Hon. G. C. Hawker, Bungaree, S. A.

THE BUNGAREE STUD MERINOS.

The Property of the Hon. G. C. Hawker.

This flock was formed over 40 years ago with some ewes and rams which the present proprietor brought from New South Wales. Fresh blood was introduced into the flock in 1858, when five imported Negrette rams were added to it. In 1861 a change was made in the breeding, and imported Rambouillet rams were used in the flock. In 1865 and 1874 rams from the well-known flock of Mr. John Murray, of Mount Crawford, were purchased. The last addition of outside blood was in 1884, when a ram bred by Messrs. W. Gibson and Son, of Scone, was purchased for 500 guineas. The mingling of the Negrette and Rambouillet bloods with that of the original sheep has had an excellent result. As in almost every flock where they have been used, especially in the warmer portions of Australia, the Rambouillet blood has given large size, good shape, and great length of wool. The Bungaree sheep are noted for their size, symmetry, and great weight of fleece. They are in favour with the sheep-farmers in the hot, dry plains of the interior, having shown that they can withstand the heat of the climate and yield a heavy fleece, as the following instance will show :—5,000 wethers, bred at Bungaree and sent when 2-tooth to the Parrallara station, 450 miles north-east of Adelaide, yielded, when full-mouthed, an average of 10½ lbs. of sound, clean wool in the grease, while in the previous year 6,000 wethers, treated the same way, yielded an average of 11 lbs. of greasy wool. The wool from this flock is well known as a strong, well-

grown combing wool of great length of staple. It has for years brought very high prices in London; 510 bales of the clip of 1883 averaged 1s. 1½d. in the grease.

The following returns show the weight of wool yielded by the whole of the flock:—In 1880 the average yield of 18,211 2-tooth ewes and wethers, and 20,094 breeding ewes—in all 38,805 sheep—was 8 lbs. 12½ ozs. per head; 19,700 lambs, 17 weeks old, gave an average of 2 lbs. 14¼ ozs. of wool per head; and 512 rams yielded an average fleece of 13 lbs. 2⅔ ozs. In 1884 the returns were:—2,858 rams, from 2-tooth to broken-mouthed (nearly half being 2-tooth), gave an average of 13 lbs. of greasy wool; 5,303 wethers cut 10 lbs. 12 ozs. of greasy wool per head; 31,928 ewes, from 2-tooth to broken-mouthed (more than one-third being four years and over), gave an average of 8 lbs. 7 ozs. of greasy wool; and 19,965 lambs, 5½ months old, cut 3 lbs 7 ozs. of greasy wool per head; the grown sheep averaged nearly 9½ lbs. of unwashed wool, very clean and light in condition. Ten rams shorn in Adelaide in 1884 yielded fleeces ranging from 16 lbs. to 21¼ lbs. the average being 18 lbs. 13 ozs. Ten ewes exhibited at the same time yielded fleeces ranging from 12½ lbs. to 18¼ lbs., the average being 14 lbs. 9 ozs. At the Adelaide show of 1886 the three fed rams that took first prize yielded an average of 20 lbs. 7 ozs. of greasy wool, and the fleeces of the grass-fed rams that took first prize in their class averaged 19 lbs. 8 ozs. The three first prize fed ewes averaged 17 lbs. 10 ozs. of greasy wool, and the three prize ewes in the grass-fed class averaged 12 lbs. 15 ozs.

Rams from the Bungaree stud have been sold in Melbourne for some years past. The average price for 17

rams in 1882 was £97, and in 1883 18 rams averaged £143; one ram sold as high as £651.

The Bungaree flock has been for over 35 years in the charge of Mr. John Noble. Mr. Hawker says:—"It is owing to his great judgment and care that this flock holds the high position it does at the present time."

The Bungaree estate is situated about 100 miles to the northward of Adelaide, and is seven miles from the town of Clare. The country is high rolling downs, lightly timbered with gum and sheoaks. The soil is red coloured, the grass being fine and thick. It is very cold in winter, and the heat is great in summer. The rainfall averages about 22 inches.

THE CANOWIE MERINOS.

The Property of Messrs. Saunders, James and Co.

The Canowie estate was first occupied by Dr. Browne as a squatting station, and was stocked with sheep that were noted for their excellence. After holding the station for some years Dr. Browne sold it to Mr. A. M. Price, from whom it was purchased by Mr. James, one of the present firm of proprietors. The stud flock was formed in 1857 with the pick of the ewes in the breeding flock, and with them were coupled some imported Negrette rams. The object sought in establishing a stud was to breed rams for the station flocks, but little or no care was taken of the young stud ewes till the flock came under the management of Mr. T. Goode, who, seeing the great value of the sheep, at once inaugurated

a better system of stud management. The Negrette rams were followed by five imported Rambouillet rams and the effect of this change was most beneficial. The French sheep increased the size of frame, lengthened the staple, and gave greater weight of fleece. One of these rams lived till he was 14 years of age, and the last fleece he yielded weighed 13 lbs. in the grease. After the Rambouillet rams some sires drawn from the celebrated flock of Mr. J. Murray, of Mount Crawford, were used, and since then the breeding has been from selection within the flock. Since this stud was formed it has been highly esteemed by sheep-farmers in South Australia, but it is only within the last dozen years that the sheep have been known to stockowners in the other Australian colonies. With the dwellers in the sultry lands of Central Australia they are especial favourites, their large, finely-proportioned frames and heavy fleeces of a robust type of long-stapled wool being great recommendations. The credit of forming this well-known stud must be given to Mr. T. Goode, who for over 20 years has had the management of the flock. The following return from the shearing of 1883 will give an idea of the profitable qualities of the Canowie sheep. It must be borne in mind that the season was a very severe one. The sheep shorn consisted of 35,312 head, of which 20,162 were breeding ewes and 2,820 broken-mouthed ewes. The yield was 8 lbs. 1 oz. of greasy wool per head all round; 15,546 lambs gave an average of 3 lbs. 3¼ ozs. of greasy wool. Some years ago a flock of 1,800 broken-mouthed ewes that had dropped 90 per cent. of lambs, cut 8½ lbs. of greasy wool. A ram and ewe, twins from a champion ewe by a champion ram, cut at 4-tooth, the

ram 24 lbs. and the ewe 16 lbs. Next season the ram (heavily worked) cut 22 lbs. and the ewe, with a lamb at foot, cut 14 lbs. of greasy wool. Some visitors to the estate in 1884 made an experiment with the view of ascertaining the average weight of fleece yielded by the stud sheep. From the flock of 2-tooth rams yarded at the shearing shed a sufficient number were run off to fill the pens. These were shorn and the wool weighed. The visitors then counted the sheep, and the result was that 819 2-tooth rams cut an average of 12 lbs. 13 ozs. of wool. A similar course was followed with a flock of 1,600 2-tooth ewes, with the result that 1,001 ewes cut an average of 10 lbs. 4 ozs. Messrs. E. Langton and Co., who were present at the shearing, state in a letter to the *S. A. Register*, 27th October, 1884:—"The wool was very clean and light in condition, there being less yolk than usual this season, and we were informed that it was of not quite twelve months' growth."

At the annual shows held by the Royal Agricultural Society in Adelaide during the last eight years, out of a total of 117 prizes awarded to grass-fed merinos 52 prizes were secured by Canowie sheep, in competition with sheep from the best studs in the country, and only once during that period did they miss taking either the champion ram or the champion ewe prize.

The sheep are handsome, large-framed, and have a longer staple of wool than most Australian sheep. The country lies high, and though hot in summer it is very cold in winter, and snow is generally seen on the ground at least once a year. The estate consists of finely grassed rolling downs, over which the wind blows piercingly cold. It is situated about 100 miles north of Adelaide.

THE HILL RIVER STUD MERINOS.

The Property of Mr. J. H. Angas.

This stud was formed with selections from the Hill River and Mount Remarkable flocks. The latter flock was descended from Saxon sheep imported by the South Australian Company about 1836. The imported sheep were selected from the following well-known studs:—Leutewitz, Nischwitz, Burser, and Oschatz. Of these studs Leutewitz, Burser, and Oschatz were derived from the Kliphausen stud, which was descended from the Electoral flock. In 1844 the South Australian Company imported Mecklenburg rams and also rams from Tasmania and New South Wales. With the Mount Remarkable stud Mr. Angas purchased a small flock, the property of Mr. W. B. Randall, the manager. The Hill River flock was for many years the property of Mr. C. B. Fisher. After Mr. Angas bought the flock he used rams bred by Mr. T. H. Dutton, of Onlaby, and rams from the Canowie and Mount Crawford studs. In 1865, rams bred by M. Godin, of Chatillon-sur-Seine, France, were imported. This flock was successful in taking prizes in both France and England. After the stud was formed, rams bred by Mr. C. B. Fisher were used. In 1885, Mr. Angas purchased the ram named "Hercules," bred by Mr. D. Taylor. He was by "Longwool," a son of "Sir Thomas," and was for a time used by Mr. H. Gatenby in his stud. For this ram Mr. Angas paid £1,150. Hill River is near the town of Clare, about 80 miles from Adelaide.



Stud Rams.

by Mr. G. H.

N. Z.

A NEW ZEALAND STUD FLOCK.

THE ASHLANDS MERINOS.

The Property of Mr. G. L. Sise.

I HAVE included a notice of this flock for the reason that sheep from it have been imported into Victoria and used in one of our highest-bred studs with excellent results. About 22 years ago Mr. G. L. Sise, an American gentleman residing in Dunedin, N.Z., commenced breeding pure merinos with some sheep he obtained from the late Mr. George Campbell, of Westminster, Vermont. The first importation was made in 1865, and was followed by further importations in 1866 and '67, and he occasionally imported a few rams from America until 1880. The parent flock is one of the best bred studs in America. The following is its history:—In 1839, Mr. George Campbell, of Vermont, established a flock of pure merinos with 20 ewes of the Humphreys strain of blood and the like number of ewes of mixed Jarvis and Humphreys blood. To these were added ewes from the flocks of Stephen Atwood and Andrew Cock. All these strains of blood are of undoubted pedigree. The origin of Colonel Humphreys' flock was the few sheep he imported from Lisbon in 1802, and from which most of the famous studs of Connecticut are derived. Stephen Atwood commenced breeding pure merinos with one old ewe which he purchased from Colonel Humphreys in 1813. The Hon. Wm. Jarvis's original sheep were imported by him from Spain in 1809, and consisted of 200 sheep from the

Escorial flock. Andrew Cock, of Long Island, commenced his flock in 1811 with two imported ewes, for which he paid 1,100 dollars. It will be seen from the foregoing that the breeding of the flocks from which Mr. Campbell drew his original sheep leaves nothing to be desired. The two famous rams "Young Wooster" and "Old Grimes" were both owned and used by Mr. Campbell. The highest distinction ever awarded to any American stud was gained by Mr. Campbell's sheep. In 1863 he sent six rams and six ewes to the International Exhibition at Hamburg, where they competed against 1,761 sheep drawn from the finest studs in Germany, and several French flocks, including some Rambouillet sheep sent by the Emperor Napoleon. In spite of the prejudice of the German sheep-breeders and the press, the committee, consisting of 18 noblemen and gentlemen, by a unanimous vote, gave Mr. Campbell the prizes for the best and second best ram, and for the best ewe. After the show the 12 sheep were sold to a Prussian nobleman for 5,000 dollars. The highest price realized by any German sheep sold at the same time was 200 dollars. Mr. Campbell exhibited some wool at the Sydney International Exhibition in 1880, but it arrived too late to compete. Of this wool the judges said:—"These fleeces are the best of the foreign exhibits—that is to say, a full fleece exhibit—in the whole collection; in fact, there is nothing to approach it. With the exception of a lack of softness, it has every characteristic of the best Australian exhibits. The quality is undeniable, and the staple dense and even." Induced by glowing reports of immense fleeces, Mr. Sise imported a number of ewes and rams from other American flocks, but they proved great failures, and they and their

stock were cast out of the stud. Among the imported sires used in the stud were some rams that had been used in Mr. Campbell's stud. Of these the most successful was "Favourite," whose son, "Don," was for many years one of Mr. Sise's best sires. When I saw this ram he was eight years old, and that season his fleece weighed 21 lbs. in the grease. I had him put on the scale, and though very low in condition he weighed 149 lbs. without his fleece. As a 4-tooth his fleece weighed 23 lbs. An imported ram, named "Dictator," still used in the flock, has produced some very fine stock. As a yearling he took first prize in his class at Worcester, Mass.; his fleece that year weighed 21 lbs. He also took first prize as a 2-year-old ram, and won the sweepstakes as the best ram shown with ten of his lambs. I visited Ashlands early in 1884. The season was singularly bleak and wet, and the sheep had suffered from cold and exposure after shearing. I was so struck with the fine, well-shaped frames of the sheep that, poor as they were, I had several of them weighed. A 5-year-old ram weighed 148 lbs; an 8-year-old ewe, rearing a lamb, weighed $104\frac{1}{2}$ lbs.; a 9-year-old ewe, with a lamb at foot, weighed $106\frac{1}{2}$ lbs.; and an 8-year-old ewe, rearing a lamb, weighed $114\frac{1}{2}$ lbs. The heaviest fleece cut by a stud ram was from "Perfection;" it weighed 24 lbs. The sheep at Ashlands have a heavy dew-lap and apron, but are free from the folds on the body which are such a distinguishing feature in the stud sheep lately imported from America. They have soft faces, good size, and heavy fleeces of a most useful description of wool, free from kemps. The Ashlands sheep are remarkably quiet, and this, I imagine, is due to the kindness with which they

are treated. The stud at present numbers about 600 head.

Ashlands is within easy reach by rail from Dunedin.

BRITISH SHEEP.

THE WERRONGGURT LINCOLNS.

The Property of Mr. Thos. F. Rutledge.

These stud sheep are the direct descendants of the famous old Farnham Park stud, so well known to the breeders of long-wool sheep throughout Australia. The stud was formed by the late Mr. Wm. Rutledge, in 1865, with three rams and eight ewes selected from the flock of Mr. J. K. Kirkham, of Lincolnshire. In 1868, Mr. Rutledge purchased eleven ewes, having two lambs each, from the late Ed. Wilson, of Arundel, who imported them. The price paid for these sheep was £10 each for the ewes and £5 each for the lambs. I am unable to say from what English studs these sheep were derived, but they were always regarded as the largest and finest sheep in the Farnham Park stud. In 1871, Mr. Rutledge imported ten rams and sixteen ewes, from the flock of Mr. Kirkham; and he made purchases of pure Lincolns from Mr. Thomas Austin, Barwon Park, and from Messrs. J. Sanderson and Co., Brie Brie. The flock was afterwards augmented by the purchase of the Lincoln stud bred by Messrs. C. and A. Finlay, Glenormiston.

The originals of this flock were obtained from Mr Laddison, Mr. Chaplin, and Mr. Oliver, all of Lincolnshire. Until 1873 the rams used in the Farnham Park stud were all from the flock of Mr. Kirkham. In 1874, a ram of some note, named "King Billy," bred by Mr. King, of Lincolnshire, was purchased at a cost of 250 guineas, and a ram named "Emperor," bred by Mr. Clarke, of Lincolnshire, was purchased for 200 guineas. The produce of these rams were of great excellence. The Farnham Park sheep have been very successful at shows. At Messrs. Hastings Cuninghame and Co.'s wool show in 1879 the wool from this flock took first and second prizes for the most valuable 50 ewes' fleeces, unwashed. The average weight per fleece was 15 lbs. $0\frac{2}{3}$ ozs., valued at $7\frac{1}{2}$ d. per lb. In 1877 four samples of Farnham Park wool were sent to Mr. Thos. Kirkham, of which he expressed the following opinion:—"They are splendid specimens of Lincolnshire wool, and contrast very favourably with what we can produce here." The following have been the most noted prize-takers in the flock:—"Cupbearer," by "King Billy," won the 100 guineas challenge cup at Hamilton, in 1875, against ten others, and took first prize as a 2-tooth. In 1878 he won champion prize (£50) at Hamilton. As a 2-tooth he cut 20 lbs. of greasy wool; and as a 4-tooth his fleece, of exactly twelve months' growth, weighed 30 lbs. of unwashed wool. "Ganymede," by "Emperor," won the 100 guineas challenge cup at Hamilton, as a 2-tooth, in 1876, and took champion prize at Hexham the same year. As a 2-tooth "Ganymede" cut $21\frac{1}{2}$ lbs. of greasy wool, of 316 days' growth. "Beauty," by "King Billy," won the champion prizes at Hamilton and Hexham in

1876; as a 2-tooth she cut 16½ lbs. of greasy wool. "Bismarck," by "Emperor," took first prize as a 4-tooth at Hexham, and that year his fleece weighed 27½ lbs. He was sold to Mr. Albert Austin, of Eilyer, for £300. In 1879 two stud sires were imported from the flocks of Messrs. Kirkham and Marshall. On the death of Mr. Wm. Rutledge the stud flock was divided between his sons, Thos. F. Rutledge, of Werronggurt, and Wm. Rutledge, of Farnham Park. Werronggurt is situated about three miles from Warrnambool, on the Port Fairy road. The pastures are considered the finest in Australia.

THE MERRANG LINCOLNS.

The Property of Mr. Robert Hood.

This stud was formed by Mr. Hood, in 1872, with sixteen ewes purchased at the sale of the late Mr. Thos. Austin's Barwon Park flock. The same year he imported eleven rams and thirty-three ewes, which were selected by Mr. John Sanderson from the flocks of Mr. Marshall and Mr. Kirkham. These sheep, when landed in Melbourne, cost an average of £35 for the rams and £25 for the ewes. On their arrival at Merrang two rams, named "Victor" and "Sherwood," were selected for use in the stud. "Sherwood" was a Kirkham ram, but "Victor's" mark was obliterated on the voyage, consequently it was impossible to say which flock he was from. "Sherwood" was a moderate-sized sheep (evidently a twin lamb), and was never exhibited. His progeny, however, have been very successful in the show-yards.

"Victor" was exhibited several times, and was a great prize-taker. Since the importation of the Marshall and Kirkham sheep Mr. Hood has bred entirely from "Sherwood" and "Victor" and their progeny. A union of the two families, by combining the lustre and quality of "Sherwood's" fleece with the heavy lock of "Victor," has proved a very successful nick. This flock was almost invincible in the show-yards from 1874 to 1879; the total value of the prizes taken by the Merrang sheep in the period named was £843 7s. in plate and £630 in cash, besides many gold and silver medals. For some years past Mr. Hood has not exhibited at any of the leading shows. Merrang is situated on the River Hopkins, in the Western District of Victoria. The climate is temperate, with an ample rainfall, and the pastures are abundant.

THE MOUNT NOORAT LINCOLNS.

The Property of Messrs. Black Bros.

This flock was formed, in 1873, by the late Mr. Neil Black, with twenty-four ewes and six rams from Mr. W. F. Marshall's stud, and five ewes and two rams from the stud of Mr. J. A. Kirkham, of Caistors, which were selected for Mr. Black by Mr. J. Mitchell. To the imported sheep were added ten ewes and six lambs bred by the late Wm. Rutledge, of Farnham Park. Since then no sheep have been added to the flock, which has been bred within itself. The Mount Noorat sheep have not been often exhibited at our leading shows; but when

they have competed they have taken a fair position in the prize list. The only record taken of the shearing was in 1884, when the whole of the stud sheep, including lambs, and numbering 251 head, averaged 13 lbs. 0 $\frac{3}{4}$ oz. This stud at present numbers 300 breeding ewes. In 1888 Messrs. Black Bros. purchased from Mr. W. Rutledge, of Farnham Park, the whole of his Lincoln stud, numbering 1,257 ewes. A record of this famous old flock will be found in the notice of Mr. Thomas F. Rutledge's stud. Mount Noorat is situated about eight miles from Terang. The climate is excellent and the pastures admirable.

THE CERES STUD LINCOLNS.

The Property of Mr. Thos. Bath.

THIS stud was formed in the year 1872, with some imported Lincoln sheep selected from the flock of Mr. T. M. Cardwell, who obtained his sheep at the dispersal of the flock of Mr. T. Greetham, of Stainfield. This flock had occupied a prominent position among the English long-wool studs for nearly a century. For many years the principal attraction at the great fair of Lincoln was the pens of hoggets from Stainfield. These sheep were celebrated for their great size, remarkable symmetry, and heavy fleeces of lustrous wool. They always commanded a higher price than any other sheep of the same age. Mr. Cardwell used rams bred by Mr. Marshall, of Bransstone, and Mr. Caswell, of Leighton. Besides the sheep from Mr. Cardwell's flock, Mr. Bath purchased seventeen

imported sheep in Melbourne, which were from the flocks of Mr. W. F. Marshall and Mr. W. H. Kirkham, and which averaged £49 per head. In 1879, Mr. Bath imported three rams from the stud of Mr. Cardwell. Mr. Bath has taken a large number of prizes at the leading Victorian shows. Ceres lies high, and the winters are cold; consequently, the hoggets are not so forward as those from warmer localities. The sheep are carefully culled every year. Ceres is situated close to the village of Learmonth, about fifteen miles from Ballarat.

THE COLLINGROVE LINCOLNS, S.A.

The Property of Mr. J. H. Angas.

This flock was founded by Mr. Angas in 1865. The original sheep consisted of fifteen ewes from the flock of Mr. Hall, Lincolnshire, and twenty-five rams from the flock of Mr. G. Angas, Bawtrey, Yorkshire. Further importations were made from the flocks of Mr. G. Angas and Mr. Turner, Lincolnshire, in the years 1867 and 1869. In 1879 he obtained some sheep from the flock of Messrs. Dudding, of Panton House, Lincolnshire. The Collingrove Lincolns have met with a fair share of success in South Australia, having carried off 203 prizes since 1867. Collingrove is situated in the Barossa Ranges, about fifty miles from Adelaide.

MR. G. T. CHIRNSIDE'S LINCOLNS.

At the dispersal of the Koorongah stud, the property of Messrs. Knight and Lydiard, in 1888, Mr. G. T. Chirnside purchased eighty-four of the stud ewes, and he also purchased a number of rams and ewes from Messrs. Finlay, of Glenormiston. The Koorongah Lincolns were bred from a choice lot of sheep imported from the studs of Mr. Marshall and Mr. Kirkham, both of Lincolnshire. Since the first importation the flock was bred entirely within itself. In the year 1889 Mr. Chirnside imported a lot of select sheep, of which three rams and six ewes were from the stud of Messrs. Dudding, and five ewes were from the stud of Mr. Pears.

This is a private stud, and is kept up for breeding crossbred stock for market. The stud is at present kept at Werribee Park.

THE HON. W. H. OSMAND'S LINCOLNS.

For some time past the Hon. W. H. Osmand, M.L.C., of Stawell, has bred a small but select flock of Lincolns. Wishing to improve the quality of his sheep he, while on a visit to England last year, determined to secure the finest rams in the country. He purchased from Mr. Dudding, of Granby Hall, Lincoln, a 4-tooth ram named "General," that took first prizes at the Royal Shows at Windsor, at Lincoln, and at Nottingham; also "King Tom," that took second prizes at the three shows named,

and "Premier," a ram that was placed third at Nottingham and at Lincoln. The price paid for these rams, which may be fairly assumed to be the best in England, is said to be the highest ever given for as many long-wool rams in England.

THE MERTOUN PARK STUD FLOCKS.

The Property of the Hon. Wm. M'Culloch, M.L.C.

THE LINCOLN STUD.

Mr. M'Culloch founded a flock of pure Lincolns in December, 1879, with a dozen sheep imported in the ship *Roderick Dhu*. Of the breeding of these sheep Mr. C. W. Tindall, of Grimsby, Lincolnshire, writes:—"We had great difficulty in finding what you required, especially in the case of the ewes. With regard to the rams, one from Mr. Smith, of Cropwell Grove, Nottingham, is the first prize shearling at the Royal Show at Kilburn, for which I had to pay £100. (This ram died on the voyage.) The other shearling, bred by Mr. Wright, of Nocton Heath, Lincoln, won the first prize at our Lincoln Show at Stamford. We had to give 100 guineas for this ram; so, in the two, you will see you must have got the two best shearlings out of Lincolnshire this year." Of the ewes he says:—"Three are from Messrs. Dudding's flock at Panton, three from Mr. Garfit's, Scotherne, near Lincoln, and four from Mr. Foot, M.P., Aylesbury Manor, Grimsby. They are the best out of each flock. I was at great pains to get the best, and spared no time in doing what I could to find

them." The Cropwell Grove flock was very successful in taking prizes in the four years from 1876 to 1879. They gained no less than 97 prizes (57 of them being first prizes), the total money value of which was £642 10s. The second ram died soon after landing in Victoria, but all the imported ewes had been put to him.

In 1888 Mr. McCulloch made a further importation of Lincoln sheep. The shipment consisted of a 2-tooth ram bred by Mr. H. Dudding, Kirby Grove, Great Grimsby, and four ram lambs bred by Mr. J. Pears, of Mere, Lincoln. The eleven ewes were all from the flock of Mr. Robert Wright, of Nocton Heath, Lincoln. This famous flock was established by Mr. Wright's father about eighty years ago. During the last twenty-seven years the sheep from this flock have carried off 239 prizes, in competition with the best sheep in Lincolnshire. A 2-year-old ram from this flock has cut a fleece weighing 33 lbs. of washed wool, this being the heaviest fleece on record.

THE BORDER LEICESTERS.

During the year 1888 Mr. McCulloch imported a small lot of specially selected Border Leicesters. They were all from the famous stud of Lord Polwarth, of Mertoun, St. Bramwell's, and consisted of one ram and eight ewes. Nine ewes were shipped, but one died on the voyage. Lord Polwarth is very particular about selling ewes out of his flock, and will part with them only on the condition that they are to be exported from Great Britain. His sheep are in great demand with those who favour this breed, and last year his average for rams was £36 4s. per head. I saw these sheep soon after their arrival, and found them large-framed, well formed, and

with much of the old-fashioned type; but they were evidently of a much more robust constitution than any of the English Leicesters we have had in Australia. Since their arrival at Mertoun Park seven ewes have produced fifteen lambs, all of which are alive and thriving. The sheep imported by Mr. M'Culloch have been acknowledged by breeders of Border Leicesters to be the best examples of the breed in Australia.

THE HAMPSHIRE DOWN STUD.

In 1888 Mr. M'Culloch imported a number of Hampshire Down sheep, selected from some of the finest flocks in England. The shipment consisted of two rams and twenty-five ewes. The rams were bred by Mr. T. F. Buxton, of Waters-place Farm, Hants. The ewes were bred by Mr. H. J. Hughes, of Longstock, Hants. This is one of the oldest and most celebrated flocks of Hampshire Downs sheep in England. It was formed originally by the Attwood family, and in 1878 passed into the possession of the present owner. The sheep from this flock have been very successful prize-takers. [An equal number of Hampshire Downs sheep came with this shipment, belonging to the Hon. W. I. Winter-Irving, M.L.A. Their destination is at present unknown.] Lambs from the imported rams, from comeback ewes, have been much admired by butchers. They develop rapidly, are ready for market before the ordinary comeback lambs, are superior in quality, and realize higher prices than lambs of the same age from other breeds.

THE AITKENSIDE BORDER LEICESTERS.

The Property of Mr. J. C. Cochrane.

The Border Leicesters bred by Mr. J. C. Cochrane are descended from sheep imported several years ago by Messrs. Adams Bros., of St. Enochs. Mr. Cochrane purchased the originals of his flock about 1884, and has since used the finest rams of this breed that can be obtained in Australia. One very fine framed stud sire was imported from New Zealand. When in ordinary condition his live weight was 270 lbs. A stud ram bred in the flock was quite as well shaped as the New Zealand ram, though a trifle smaller. His live weight, when in moderate condition, was 240 lbs. The fine deer-like heads of these sheep render them well suited to breeding crossbreds for the butcher from merino ewes, there being few or no deaths at lambing. Last season Mr. Cochrane obtained from the Hon. Wm. McCulloch the privilege of sending a score of ewes to his imported ram, then just out of quarantine. The result was highly satisfactory. Nineteen of the ewes proved in lamb, two ewes produced dead lambs, and two lambs died soon after birth, and one ewe produced four lambs. There are now thirty-two lambs living from nineteen breeding ewes. The ewes in this flock are very shapely, and the wool realizes a fair price. The young stock are fit for the butcher at an early age. At from fourteen to eighteen months old they will give from 80 lbs. to 120 lbs. of dressed carcass. Where special pains are taken to force the young stock, better results can be obtained, but as yet the art of feeding sheep, save for

shows, is almost unknown in Victoria. Aitkenside is situated on the summit of the Barrabool Hills, about eight miles from Geelong. The soil is fertile, but the country, which is bare of timber, is very bleak in winter, and all stock reared thereon are very hardy.

THE KADLUNGER SHROPSHIRE DOWNS, S.A.

The Property of the Hon. S. J. Way.

This stud of pure Shropshire Downs was formed by the present proprietor last year with a yearling ram and ten 2-year-old ewes, which were selected for Mr. Way by Mr. W. H. Godwin, Lugwardine, near Hereford. The parents of these sheep are all registered, five of them being by a noted ram named "Double R," who was the son of the still more famous prize-taker "Ambassador." The other ewes are all by first-class sires. The ram is named "Signal Substance." He is by "Royal Coventry," his sire being "Royal Oak." Before leaving England, five ewes were served by "Brakesman" and five by "Substance." As the imported ram is not related to the ewes, there will be no close breeding in increasing the flock. Since their arrival in South Australia eight of these ewes have produced fifteen lambs, which are thriving remarkably well on the natural pasture of the country. The sheep are kept at Kadlunger, on the Mount Horrocks Range, at the head of the Hill River, about eighty miles from Adelaide. The country is composed of ironstone ridges, with rich, well-grassed flats between.

THE DREEITE COTSWOLDS.

The Property of Mr. L. G. Calvert.

This flock was formed by the late Mr. John Calvert in 1862 with one ram, nine ewes, and two lambs, which he purchased from the late Mr. W. Lyall, of Harewood. Mr. Lyall bought his first Cotswolds in 1885 from Mr. W. Lane, of Broadfield Farm, Northbeach, Gloucestershire. He also imported a second lot of Cotswolds in 1858, which he bought from Mr. R. Garne. This shipment consisted of a prize ram and ten ewes. In 1866 a stud ram was purchased from Mr. Lyall, for use in the Dreeite flock. In 1868 four rams were imported by Mr. Calvert, of which he wrote out to say that they were from the best flocks in England. No sheep were added to the flock until the year 1889, when three rams and two ewes bred by Mr. R. Swanwick, of the Royal Agricultural Farm, Cirencester, were imported. Mr. Swanwick's flock have been remarkably successful in the show-yards of England. In the eleven years ending in 1883 they carried off prizes to the value of £1,176 19s. 6d., besides the Progress medal at Vienna, the Centennial medal and sweepstakes at Philadelphia, the four highest gold medals at the International Exhibition at Paris, besides numerous cups. Dreeite is situated on the eastern shore of Lake Corangamite, about 12 miles from Colac.

THE ASHTON SOUTHDOWNS.

The Property of Mr. J. W. Brumby.

This flock is descended from the Southdown sheep imported into Tasmania by the Cressy Company in 1825. Since the importation of the original flock, the purity of blood has been carefully maintained, none but sheep from the most famous flocks in England having been used in it. Sires have been obtained from the flocks of Mr. Jonas Webb, the Duke of Richmond, and other eminent breeders. At the sale of Mr. J. D. Toosey's stud of Southdowns in 1884, Mr. Brumby, who had been breeding from the Cressy flock since 1865, purchased most of the choice lots. Mr. Toosey's sheep were bred in the same way as Mr. Brumby's. Mr. Toosey's father managed the Cressy Company's estate, and on the company selling off their stock, he purchased the larger portion of the Southdown flock. Mr. Brumby has been very successful with his sheep in the principal show grounds in Tasmania. In the years 1884 and 1885 he carried off over forty champion, special, and other prizes. The sheep are very hardy, and cut heavy fleeces for this breed. The ewes have cut as high as 7 lbs. of greasy wool, and the rams as high as 10 lbs. They are extremely prolific, Mr. Brumby having marked as high as 150 per cent. of lambs. Ashton is situated in the centre of the district of Cressy, about eight miles from Longford, Tasmania.

THE HAWKRIDGE SOUTHDOWNS.

The Property of Mr. Fredk. Peppin.

This flock is descended from the Southdown stud kept for the last twenty years by Mrs. Woodhouse, of Rockwood, New South Wales. The original sheep were selected by Mr. Thos. Yeo, from the stud of Colonel Kingscote, of Kingscote. Mr. Peppin purchased his sheep from Mrs. Woodhouse, in 1884. In 1888 Mr. Peppin imported a ram and two ewes from England. They were bred by Mr. Edwin Ellis, of Summersbury, near Guildford, Surrey. The ram was by "Merton," bred by Lord Walsingham, who sold him in 1885 for 105 guineas. One ewe was by "Baronet" (bred by Mr. Ellis), whose sire, "Ripon," bred by Lord Walsingham, was the sire of many high-class sheep. He was sold in 1885 for 41 guineas. The second ewe was by "Merton," from a ewe by "Columbus." Hawkridge Farm is near Whittlesea, about eighteen miles from Melbourne. A shearling son of "Baronet," "Royal Windsor Champion," bred and exhibited by Mr. E. Ellis, carried off the highest honours at the Royal Agricultural Society's Exhibition at Windsor, in July, 1889. The portrait of this ram was given in the *Live Stock Journal*.

THE MOUNT AITKEN SHROPSHIRE DOWNS.

The Property of Mr. Henry Beattie.

Mr. H. Beattie, of Mount Aitken, Victoria, has formed a stud of Shropshire Downs with two rams and eighteen

ewes, all 2-tooth, imported from England in the s.s. *Aberdeen*, which arrived in Hobson's Bay on the 16th November, 1889. The rams were selected from the flock of Mr. Thomas Fenn, of Stonebrook House, Herefordshire; and the ewes were from the flock of Mr. J. Hall, Fellhampton Court, Salop. The rams had been exhibited at the Hereford Show, with four others, when they were highly commended. These sheep are the first Shropshires that have been imported into Victoria. The flock will be located at Mount Aitken, about twenty-five miles from Melbourne.

THE CARNARVON SHROPSHIRE DOWNS.

The Property of Mr. T. Mason.

This flock is descended from an importation of Shropshire Downs made about eighteen years ago by Messrs. Wilson and Burberry. The original sheep were bred by Messrs. H. and A. Bradburne, of Lichfield. The original sheep were well bred, and the stock were kept pure by those who have held them since the first importation. Towards the end of 1889 Mr. Mason obtained a ram lamb and two ewe lambs from the Hon. S. J. Way, South Australia.

THE END.

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APPENDIX.

[By a singular mischance the record of this flock was omitted from its place among the stud flocks of New South Wales.]

THE QUIAMONG STUD MERINOS.

The Property of Mr. F. L. Parker.

The Quiamong estate and about 3,000 sheep were purchased by Mr. Parker from Mr. Bear in the year 1869. The sheep were considered to be of an excellent stamp, and were originally obtained from Toganmain, on the Murrumbidgee. Mr. Bear was at the time a breeder of high-class merinos, and used in the Quiamong flock rams drawn from his Victorian stud. For a few years Mr. Parker followed the same line of breeding. In 1870 two rams bred by Messrs. T. and S. Learmonth, at Groongal, were added to the flock. The Groongal stud was derived from the Ercildoune flock, Messrs. Learmonth having sent a draft of the finest studs to the Riverina property before they sold Ercildoune to Sir Samuel Wilson. Two years after two rams, bred at Wargam, were added to the flock. The Wargam sheep were derived almost entirely from Mr. J. L. Currie's Larra flock. The most successful sire ever used in the Quiamong flock was a ram named "Donald," bought from Mr. Wm. Campbell, of Warwillah. He was by a famous ram named "Ribbs," purchased by the late A. N. Gilbert, then owner of Warwillah, from the Havilah stud, Mudgee. Mr. Parker gave £200 for "Donald" when a 2-tooth, and a better purchase was never made. These have been the only sires introduced into the

Appendix.

Quiamong stud since Mr. Parker bought the flock. By unremitting care and skilful selection of the breeders Mr. Parker has steadily advanced his stud to the front rank among Riverina flocks. His sheep are of large frame even for Riverina, and they have very heavy fleeces of robust combing wool. They have a strong individuality, and are a very profitable description of sheep. The Quiamong sheep have obtained a distinguished position in the contests for the champion challenge prize at Deniliquin. Mr. Parker won the first of these challenge prizes with a ram that gave 9 lbs. 3½ ozs. of scoured wool as a 4-tooth, and 9¼ lbs. of scoured wool as a 6-tooth. He also won the second challenge prize, his heaviest scoured fleece being 8 lbs. 14½ ozs. from a 4-tooth ram. In the first year of the sixth challenge prize Mr. Parker's three 2-tooth rams were placed first, second, and third. The heaviest scoured fleece was 8 lbs. 12½ ozs. The heaviest fleece cut by the Quiamong sheep in these contests was 9 lbs. 13½ ozs. of scoured wool. The scouring is done by experts, under the direction of the Society. Lately Mr. Parker has made an experiment with two Vermont-Australian rams, bred by Mr. Thos. M'Farlane, of Yathong. One of these rams won the champion prize for grass-fed ram at the Australian Sheep-breeders' Association Show in Melbourne. Mr. Parker has undertaken an experiment with 1 ram and 23 ewes imported from the Rambouillet stud, France. These sheep are rented from Mr. A. Blackwood. These experiments are being conducted so that the sheep can be eliminated from the stud should the cross not prove successful. The Quiamong sheep have taken many of the highest prizes at the best shows in Riverina. The estate is situated close to the post town of Conargo.



„Nugget“ 5 years.

by the Co'y N. S. W



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